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- Volume 1 contains No. 1 to No. 4, inclusive.
Volume 2 contains No. 5 part 1.
Volume 3 contains No. 5 part 2.
Volume 4 contains No. 5 part 3.
Volume 5 contains No. 6 to No. 22, except No. 12.
Volume 6 contains No. 23 to No. 27.
Volume 7 contains No. 28 to No. 36, except No. 35.
Volume 8 contains No. 37 to No. 70, except Nos. 53, 64,* and 65.
Volume 9 contains No. 53 part 1.
Volume 10 contains No. 53 part 2.
Volume 11 contains No. 53 part 3.
Volume 12 contains No. 53 part 4.
Volume 13 contains Report on Commerce and Navigation.
Volume 14 contains No. 35, in quarto.
Volume 15 contains No. 12, in quarto.
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OF THE

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34TH CONGRESS, }
3d Session. }

SENATE.

{ Ex. Doc.
{ No. 53.

REPORT

OF THE

COMMISSIONER OF PATENTS

FOR THE YEAR 1856.

ARTS AND MANUFACTURES,

IN THREE VOLUMES.

VOLUME I.

WASHINGTON:
A. O. P. NICHOLSON, PRINTER
1857.

IN THE SENATE OF THE UNITED STATES, *February 17, 1857.*

Resolved, That there be printed, in addition to the usual number, twenty-seven thousand copies of the Annual Report of the Commissioner of Patents on Arts and Manufactures for the year 1856—two thousand copies of which shall be for the use of the Commissioner of Patents, for the purposes of official distribution.

Attest :

ASBURY DICKINS, *Secretary.*

PATENT OFFICE,
Washington, February 5, 1857.

SIR: I have the honor to transmit herewith, to be laid before Congress, my annual Report for the year 1856, as required by the 14th section of the act of 3d March, 1837.

I have the honor to be, very respectfully, your obedient servant,
C. MASON,
Commissioner of Patents.

Hon. JAS. M. MASON,
President Senate United States.

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REPORT

OF THE

COMMISSIONER OF PATENTS,

FOR THE YEAR 1856.

UNITED STATES PATENT OFFICE,
January 31, 1857.

SIR: The condition of this office remains nearly the same as at the time of my last annual report. The business has been constantly increasing, but the force employed has thus far been found adequate to its prompt and thorough discharge.

The number of cases in the office undisposed of at any one time throughout the year would probably average about one hundred. At the end of the year it was only forty. It is hardly practicable to have less unfinished business awaiting the action of the office at one time, or to dispose of applications more promptly than has been done with most of the classes of cases during the past year.

The following tables, continued from previous reports, will show, in a brief and general way, many important facts connected with the business of the office, and also in respect to its present condition.

No. 1.

Statement of moneys received at the Patent Office during the year 1856.

Received on applications for patents, reissues, additional improvements, and extensions, and on caveats, disclaimers, and appeals.....	\$177,965 00
Received for copies, and for recording assignments.....	14,615 02
Received for old sash	8 00
Total.....	\$192,588 02

No. 2.

Statement of expenditures from the Patent Fund during the year 1856.

Salaries, including \$6,695 28 allowed by act of Congress August 18, 1856....	\$86,626 11
Additional compensation, per act of April 22, 1854.....	2,382 65
Temporary clerks.....	36,834 45
Contingent expenses.....	31,271 52
Payments to judges in appeal cases	225 00
Refunding money paid into the treasury by mistake.....	198 00
Refunding money on withdrawals.....	42,393 29
Total.....	\$199,931 02

No. 3.

Statement of the Patent Fund.

Amount to the credit of the Patent Fund on the 1st of January, 1856.....	\$62,512 54
Amount paid in during the year.....	192,588 02
Total.....	255,100 56
From which deduct amount of expenditures during the year.....	199,931 02
Leaving in the treasury on the 1st January, 1857.....	\$55,169 54

No. 4.

Table exhibiting the business of the office for sixteen years, ending December 31, 1856.

Years.	Applications filed.	Caveats filed.	Patents issued.	Cash received	Cash expended.
1841	847	312	495	\$40,413 01	\$23,065 87
1842	761	291	517	36,505 68	31,241 48
1843	819	315	531	35,315 81	30,776 96
1844	1,045	380	502	42,509 26	36,344 73
1845	1,246	452	502	51,076 14	39,395 65
1846	1,272	448	619	50,264 16	46,158 71
1847	1,531	533	572	63,111 19	41,878 35
1848	1,628	607	660	67,576 69	58,905 84
1849	1,955	595	1,076	80,752 78	77,716 44
1850	2,193	602	995	86,927 05	80,100 95
1851	2,258	760	869	95,738 61	86,916 93
1852	2,639	996	1,020	112,056 34	95,916 91
1853	2,673	901	958	121,527 45	132,869 83
1854	3,324	868	1,902	163,789 84	167,146 32
1855	4,435	906	2,024	216,459 35	179,540 33
1856	4,960	1,024	2,502	192,588 02	199,931 02

It appears from these statements that the disbursements for the past year have been \$7,343 greater than the receipts. This deficiency is chiefly owing to the fact that, by an item in the Civil and Diplomatic Appropriation Bill of the last session of Congress, extra compensation, amounting to \$6,695 28, was allowed to certain of the assistant examiners and clerks in the Patent Office for services rendered prior to the 4th of March, 1855. But for this allowance—which cannot at all events be regarded as a legitimate expenditure for the year 1856—the disbursements would have exceeded the revenue only \$647 72.

The foregoing tables also show that the business of the office has increased during the year in about the usual proportion. There have been 525 more applications, 118 more caveats, and 478 more patents than in 1855.

It will be seen that the patents have increased in a much greater ratio than the applications; in other words, there have been proportionally fewer rejections than during the previous year. This is pro-

bably attributable in a very great degree to progress made (both in and out of the office) in the knowledge of the proper principles and rules in accordance with which patents should be granted or refused. If perfection were attained in this respect, and if the condition of arts and inventions throughout the world were also thoroughly understood by both agents and examiners, there would be no rejections at all. The applicant and the examiner would come to one and the same conclusion. Disagreement would be as impossible as in an arithmetical calculation. Hence, every advance made in that direction tends to diminish the difference between the number of applications and the number of patents.

The following table will show how the number of patents in the United States compares with those of England and France for several years past :

Year.	England.		United States.		France.
	Patents.		Application for patents.	Patents granted.	Patents.
1846.....	493		1,272	619	2,088
1847.....	493		1,531	572	2,150
1848.....	388		1,628	660	853
1849.....	514		1,955	1,076	1,477
1850.....	513		2,193	995	1,687
1851.....	355		2,258	869	1,836
1852.....	469				
1852.....	Amendment act.		2,639	1,020	2,469
	Applications for provisional protection.	Patents passed thereon.			
	1,211	914			
1853.....	3,045	2,185	2,673	958	3,111
1854.....	2,764	1,876	3,324	1,902	3,492
1855.....	2,958	2,044	4,435	2,024	4,056

The number of patents issued from this office has now grown to exceed those granted by the English office, and the number of applications is greater than are made to that of France. In those two countries there is no examination of applications in the manner practised here, and nearly all patents applied for are granted.

Most of our present laws and regulations relative to patents have been derived from England, and it is probable that other features of their system might be studied with advantage as a means of improving our own.

One of these is the provisional protection or temporary patent for six months. This is somewhat in the nature of our caveat, but, if modified so as to be adapted to our system, would be found an improvement upon our present practice.

A caveat under our law only operates prospectively. It prevents the office from issuing a patent on any application made within one year

subsequent to the filing of the caveat without first giving the caveator a chance to be heard. But if an application for the self-same invention had been made one day previous to such filing, no notice whatever would be taken of the caveat. The very person employed to prepare the papers for the caveat, if sufficiently unscrupulous, can make an application himself for a patent for the same invention. If he anticipates the filing of the caveat by a single day, he may, at a subsequent date, obtain a patent of which there is now no power in this government to deprive him, until it has run its full length of fourteen years. Such a circumstance is known to have actually occurred in this office.

If, instead of a caveat, which only operates upon applications subsequently made, a provisional protection had been allowed which would apply to any case pending in the office, a six months' protection of this kind would be far preferable to a twelve months' caveat.

This protection might be allowed to issue as a matter of course, to be kept secret at the option of the applicant, who would receive a certificate showing his right to a provisional protection. After obtaining such protection, no patent for substantially the same invention should be allowed to issue to any other applicant, whether prior or subsequent in date of its being filed, without giving the holder of that protection an opportunity to show his superior title to such patent. And if, before the expiration of the provisional protection, an application were made by the holder thereof for a full patent, such patent, if allowed, might at the option of the applicant be dated and made to relate back to any day of the six months of the provisional protection, as is the case in England.

It might perhaps be deemed expedient to declare that no person should be made liable for the infringement of the provisional protection without being actually notified of its existence; but even with that qualification it would be a great safeguard of the rights of the inventor, and would prevent many outrageous wrongs for which our present law affords no protection or remedy.

Another feature of both the English and French regulations is, that the patent fee is paid by instalments, thus allowing the patentee, in effect, to surrender his patent whenever he finds it is of less value than the instalments still unpaid. A large majority of the patents are worthless.

The course pursued in England and France permits the inventor to feel his way by degrees, venturing from step to step, with the power of retreating at any moment he feels inclined to do so.

For instance, in England the applicant, in the first place, obtains a provisional protection for six months. This affords him time to perfect his invention, protects him in the mean time against piracy, and gives him an opportunity to satisfy himself to some extent whether it will be prudent for him to venture further. If so, he gives public notice of his intention to that effect; and if no opposition is then made, his patent issues as a matter of course, taking date, at his option, on any day of the six months of his protection.

If, before the end of three years from the date of his patent, he chooses to pay the further fee fixed by law, his patent possesses vitality

for four years longer ; and if, before the end of that term, he pays another prescribed fee, the patent is continued for seven years more.

In this manner the revenues of the Patent Office are paid in a larger proportion than under our practice by those who derive most advantage from their patent, and can therefore best afford to pay them. If the same regulation existed here, the fee paid in the first instance might, in such cases, be reduced to a much smaller sum, in order to produce a given revenue, than under the present system. But the greatest advantage presented by such a regulation is, that it would wipe out of being at an early stage of their existence a large proportion of patents which are worthless and unused, and only stand in the way of other inventors.

During nine months prior to the first day of July, 1853, two thousand and forty-seven patents were issued by the English office. The fee necessary to prolong the existence of each of these, after the end of three years from its date, was only paid on 619 of the number, leaving 1,428 to expire at the end of three years.

Under our system, these would all have continued in existence for the whole fourteen years. The majority would have been valueless, and only have served as a clog upon other inventors, inasmuch as many meritorious and useful inventions, subsequently made, might be found so far to interfere with some of those worthless patents that the former could not be used, without paying tribute to the owners of the latter.

A French patent is granted for fifteen years, but becomes void upon a failure to pay a certain annual duty. A very small percentage of them ever continue their existence throughout the whole period of fifteen years.

It has been stated in the public prints that of the 2,088 patents issued in France in 1846 less than three hundred remain in force ten years afterwards, the rest having been swept away by the regulation requiring annual instalments of the patent duty.

These payments are inconveniently frequent in France, and perhaps are more numerous in England than would be deemed expedient ; but with proper modifications the principle which lies at the bottom of these regulations has much to recommend it, and might, it is believed, be advantageously adopted by us.

Something in the nature of the English writ of *scire facias* might also with advantage be incorporated into our law. At present there is no power in this country to repeal a patent under any circumstances. Although the very day after it has issued it should be ascertained that the invention was pirated by the patentee from the real inventor, or although, for any other cause, the patent may have been erroneously granted, it must remain in existence the whole period of fourteen years. It is true in these cases the patent would be invalid, and, if granted to the wrong person, another patent may be issued to the real inventor ; still the invalid patent is allowed to exist, and may be made productive of much mischief, enabling the holder to impose upon the public either by the sale of a worthless patent, or by extorting money for permission to use the invention, which most persons would pay in preference to engaging in litigation with the holder of a patent

issued in pursuance of the statute, and allowed by law to continue its existence.

Another regulation of the English patent office which deserves to be imitated is that by which all the patents that are issued are directed to be printed separately, and sold at prices which will merely defray expenses.

I regard such an arrangement as being in an eminent degree useful and desirable for the following among other reasons :

It would enable the office to furnish complete copies of any patent, including the drawings, for one-tenth part of what they cost at the present time. It would afford the means of placing a copy of all the patents wherever they are needed for the convenience of the office or of the public, instead of having only one single copy, as at present, for all to refer to, which is wanted often by two or more persons at the same time, and which becomes worn out, so as to require to be re-written after the end of a few years. It would be a great source of economy in another particular, as the mechanical reports of this office might thus be abridged in a very great degree, as nothing further would be necessary in the annual reports than to make a complete and full analytical index of all the patents that had been issued through the year. If, in addition to what is above suggested, a copy of all the patents for the year, with the drawings attached, were deposited in the office of the clerk of each district court of the United States, nothing further in this respect would seem to be requisite. The reports would point out the general nature of the inventions made within the year; whoever desired to obtain more minute information as to any particular case could, for a few dimes, obtain from the Patent Office a complete specification and drawing of the invention, and every State would be furnished with at least one complete copy of all the patents, deposited in the very place where it could be found most useful and convenient for the purpose of reference by litigants or inventors.

To make the system complete, however, a like publication should be made of all previous patents, and also a complete analytical index of the whole. This would indeed be a work that would be worthy of the office and of the country. I feel a strong desire and a confident hope that this work will soon be commenced and consummated with all convenient despatch.

Some of the other regulations of the English and French offices are of more doubtful expediency. Among these is the entire dispensing with all examinations, such as are made in this office. Such examinations are, doubtless, productive of much good. But at the same time I think it by no means certain that this portion of our official action is placed precisely upon the correct footing. I am every year yielding more and more to the conviction that the decisions of the office in reference to patentability should not be peremptory, but merely advisory, and that some system like that suggested in my last annual report might, with great advantage, be substituted for that now in force.

But radical changes should be made with caution, and upon the clearest convictions that such changes will prove salutary. I am, therefore, hardly prepared to urge such alterations at once. But I

feel firmly impressed with the belief that we shall come to this result at last, and that the right of an inventor to protection will not be left to the arbitrary determination of any officer under the government.

The propriety of changes in the rate of patent fees has been urged upon the attention of Congress in several of the last annual reports, and nothing new suggests itself to my mind on that subject at present.

Fully confident that the changes recommended would prove salutary, and that a rate somewhat increased over that now in existence is actually necessary to enable the office to effect completely the purposes for which it was established, the favorable consideration of Congress is again invited to this subject.

All which is respectfully submitted.

CHARLES MASON.

Hon. JAMES M. MASON,
President of the United States Senate.

ALPHABETICAL LIST OF PERSONS WHOSE PATENTS HAVE EXPIRED
DURING THE YEAR 1856, WITH THEIR INVENTIONS OR DISCOVERIES,
AND CLASS.

No.	Patentee.	Invention or discovery.	Class.
2490	Adams, John J	Brushes, manufacturing.....	17
2820	Adams, John J	Glass, window, flattening and tempering ..	15
44	Adams, John J	Glass, window, flattening	Reissue.
2559	Adams, Lemuel	Churn	1
2660	Adams, Samuel	Blacking for leather.....	4
2440	Aiken, Herrick	Excavating ditches.....	9
2877	Alden, Timothy	Pens, metallic.....	18
2709	Aldrich, Elisha F.....	Constructing ships' boats, &c., to be propelled by steam, &c.	7
2597	Allen, Horatio	Valves, cut-off, for steam engines.....	6
2723	Allen, Otis	Oakum picking	3
2568	Allen, Stephen M.....	Chimney cowls	5
2427	Allen, Stephen M.....	Stove, air-tight.....	5
43	Allen, Timothy.....	Rivets for coopers.....	Reissue.
40	Andrews, Ebenezer. (See Austin Packard.)		
2671	Archer, Ellis S	Lamps, lard	5
2435	Armstrong, Martin N	Cutlery, cleaning and polishing.....	2
2580	Arnold, Alonzo C.....	Punching machine for the manufacture of covered buttons.	2
2607	Atwood, Anson.....	Stoves, cooking.....	5
	Austin, Frederick J.....	Inking type, machine for.....	Addit'l imp'ts
	Austin, Stephen. (See Austin Packard.)		
2698	Ayres, Frederick J.....	Nails, cutting, machinery for.....	2
2472	Ayres, Abraham.....	Spark arrestors and consumers.....	6
2801	Babbitt, Benjamin T., Shuler C. Higbee, and Peter W. Plantz.	Pumps and fire engines	11
	Bachelder, Lorenzo and Samuel H.	Seeding, seed planters.....	Addit'l imp'ts.
2484	Bacon, Jonathan	Springs for carriages	10
2644	Baird, Archibald H	Lamps, lard.....	5
2654	Baker, William	Wood, manufacturing, to be used as a substitute for curled hair in stuffing beds.	14
2776	Baker, William	Hinges, window blinds, and fastenings....	2
2718	Baldwin, Cyrus B	Corn shellers	1
2759	Baldwin, Matthias W.....	Steam engines, locomotive, constructing, by which they adapt themselves to the curves and undulations of the road.	6
2725	Baldwin, Stephen K.....	Pegs, shoe, machine for cutting.....	14
2562	Ball, Daniel.....	Bedstead fastening	17
2809	Ball, Jonathan	Segars, making	22
2565	Ball, William.....	Padlocks	2
	Ball, William. (See E. H. Roper.)		
2761	Banks, Thomas.....	Tires, putting on wheels of railroad cars..	10
2699	Bartholomew, Moses.....	Stoves, cooking, elevated ovens with.....	5
2512	Bartlett, Cromwell K	Excavating, ditching, embanking, and draining prairie lands, &c.	9
2515	Bartlett, Cromwell K	Plough, prairie land.....	1
2469	Bartlett, Sylvanus.....	Press, cheese	12
2418	Batchelder, Henry.....	Flue contractors or chimney valves, for fireplaces and grates.	5
2647	Bates, Issachar, Asa Wood, and David Wells.	Cultivator	1
2477	Bates, Stephen, and George Titcomb.	Propelling boats and extinguishing fires...	7
2543	Bauder, Charles L.....	Chair, rocking	17

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2682	Bazin, James A.....	Seraphines, improvement in.....	18
2585	Beach, William.....	Roofing, cast-iron.....	9
2669	Beale, Joshua T. and Benjamin.	Steam engine, rotary.....	6
2536	Beard, Josiah, and Abram Whitney.	Loom, temples for.....	3
2702	Beckwith, Amasa B.....	Water-wheel.....	11
2710	Beebe, William.....	Stoves, cooking.....	5
	Beeson, Zachariah. (See Isaac N. Lesh.)		
2643	Benson, John, Ezekiel Page, and Richardson T. Hough.	Sawing boards into oars for rowing boats.	14
2880	Benton, Benjamin H.....	Surveying instruments.....	8
2626	Bergen, Cornelius.....	Plough.....	1
2741	Bigelow, Erastus B.....	Loom-power, weaving counterpanes, &c..	3
2744	Bigelow, Erastus B.....	Loom-power, weaving counterpanes, &c..	3
2625	Bigelow, Erastus B.....	Loom, weaving carpets, &c.....	3
2639	Bigelow, Erastus B.....	Loom, weaving carpets, &c.....	3
2653	Bigelow, Erastus B.....	Loom, weaving counterpanes, &c., manner of mounting.	3
2819	Bingham, Albert.....	Lock or latch, check-bolt of.....	2
2513	Bird, Josiah N., and Edward D. Weld.	Smut machine, for cleaning grain.....	1
2716	Birely, Valentine.....	Mill, bark, grain, &c., grinding.....	13
2419	Bishop, Seth.....	Butter, working, machines for.....	1
2892	Bishop, Thomas.....	Filters.....	11
2494	Blaisdell, Stephen.....	Matches, friction, ignitable compound....	4
2577	Blake, Lemuel W., and George W.	Water-wheel.....	11
2802	Boardman, Luther.....	Spoons, casting, forming moulds for.....	2
2850	Boesch, John W.....	Roofs, metallic, rendering water-tight....	9
2861	Booth, Edwin.....	Bee-hives.....	1
2595	Bossert, Charles, and John Schomacker.	Pianoforte.....	18
2538	Bosworth, Zephaniah.....	Stoves, air-tight.....	5
58	Botts, Charles T.....	Straw cutter.....	Addit'l imp'ts.
2753	Bouton, Alexander M., and Andrew Perry.	Steam engine, changing reciprocating into rotary motion.	6
2859	Bowler, Joshua S.....	Boots and shoes.....	16
2661	Bowles, Jesse.....	Threshing machine.....	1
2540	Brady, Sam.....	Cultivator.....	1
2434	Bragg, Appleton.....	Propelling boats by endless chains of paddles.	7
3492	Branson, John, jr.....	Excavating, ditching, and embanking, scraper for.	9
2569	Brereton, John.....	Ranges, cooking.....	5
2857	Brewer, Richard.....	Furnace tuyeres.....	2
2734	Briggs, Elisha.....	Fence pickets, &c., turning.....	14
2770	Briggs, Joseph, jr.....	Engine, fire.....	11
2847	Brooks, Oliver, and James A. Sloan.	Hats, cassimere.....	3
2542	Brown, Charles, and Francis S. Crans.	Mowing, cutting and cleaning grain.....	1
2687	Brown, Christopher F.....	Gas metres.....	4
2479	Brown, Lorenzo D.....	Paper sizing.....	3
2462	Brown, Robert S.....	Buttons, forming, worked on the heads, handles, &c., of whips.	16
52	Brown, Robert S.....	Buttons, forming, worked on the heads, handles, &c., of whips.	Addit'l imp'ts.
2789	Brown, Samuel G.....	Spark arrestors.....	6
2450	Brundage, Henry C.....	Garments, measuring instruments.....	21
2852	Bruner, J. H., & R. H. Thompson.	Barrels and other cooper's ware, machine to be used in combination with improved iron hoops in the manufacture of	14

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2711	Brunier, Louis.....	Hydraulic machines.....	11
2830	Brunier, Louis.....	Steam engine, reacting, &c.....	6
2890	Bryant, William.....	Beehives.....	1
2750	Buck, Erastus.....	Stoves, cooking.....	5
2771	Buckalew, James.....	Spikes, brads, and nails, clinching.....	2
2507	Bullock, S. W.....	Press, cotton, hay, &c.....	12
61	Burnham, George.....	Inkstands.....	Addit'l imp'ts.
2686	Burnham, Hiram.....	Spinning, twisting, and kinking hair.....	3
	Burnham, Sylvester E. (See Ransom Cook.)		
2581	Burrows, Joseph H.	Millstones.....	13
2619	Carbonel, Antoine.....	Brick press.....	15
2591	Carbonel, Antoine.....	Moulds, sugar making.....	15
	Card, William F. (See Esau Whitney.)		
2561	Card, William J.....	Surveys, instruments for plotting.....	8
2635	Carleton, George W.....	Matches, friction, improvement in.....	4
	Carlile Jonathan. (See Aaron Francis.)		
2894	Carpenter, Luman.....	Copying machines.....	18
2514	Carr, Charles.....	Lamps, argand, spirits of turpentine, &c., burning.	5
2449	Carr, William.....	Windlass, ship's.....	7
2429	Carver, Eleazer.....	Gin roller, for ginning long staple cotton..	3
2745	Casselberry, Evans.....	Clocks, self-winding.....	8
	Caswell, Samuel, jr. (See Chas. Richmond.)		
2812	Chapman, John Lee.....	Hydrants.....	11
2845	Chase, A. Ralston.....	Propelling paddles, buckets, &c.....	7
2511	Chase, Moses.....	Carding and spinning machines.....	3
2461	Chevrier, Louis.....	Spark arrestors.....	6
	Clark, Edward.....	Salts, metallic.....	Extens'n
2676	Clayton, William. (See Sam- uel Guss.)	Carriage lock.....	10
2897	Cleveland, Horace.....	Excavating, ditching, and embanking earth	9
2586	Clinton, Charles.....	Boilers, steam.....	6
2551	Clirehugh, Vair.....	Composition, preparation for the hair.....	4
2875	Clute, Jeremiah, and Jacob Seabury.	Furnace, improvement in.....	2
2521	Coad, Patrick.....	Galvanic battery, &c.....	8
	Coburn, John H. (See Ros- well Douglass.)		
2842	Cochran, John W.....	Furs, process of blowing and cleaning....	3
	Collins, Fitch K. & G. S. (See Chester Stone.)		
	Collins, F. K. & G. S. (See Chester Stone)		
2816	Conant, Abel.....	Bread, raising.....	17
2672	Connison, Alexander.....	Constructing paddle wheels, and combin- ing the same with steam vessels.	7
2872	Connison, Alexander.....	Steam engine.....	6
2423	Cook, Peter.....	Smut machine cleaning grain, &c.....	1
2443	Cook, Ransom.....	Cannon, wrought iron and steel.....	19
2444	Cook, Ransom, and Sylvester E. Burnham.	Saw-mill saw, mode of straining.....	14
2623	Cook, Truman.....	Propelling steamboats and other vessels...	7
2807	Cooper, John M.....	Auger for boring earth.....	2
2743	Cooper, Peter, assignee of J. S. Gustin.	Furnace, puddling and refining iron.....	2
36	Copeland, Asa, jr.....	Gin, cotton, ribs.....	Reissue.
2724	Cornell, Abel, and Niram R. Merchant.	Stoves.....	5

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
	Crane, Benjamin. (See John Millholland.)		
	Crans, Francis S. (See Charles Brown.)		
2589	Creasey, Charles A.....	Cocks, manufacture of.....	11
2751	Creighton, John T.....	Lamps, lard.....	5
2804	Crosby, Pearson.....	Saw-mill, portable.....	14
2614	Cummings, Daniel M.....	Shingles, cutting.....	14
2881	Curtiss, Charles W.....	Bedstead.....	17
2655	Dakin, James H.....	Tents, portable.....	22
2576	Danforth, Charles.....	Spinning—cap spinner, mode of driving bobbins in.	3
2575	Danforth, Charles.....	Spinning—cap spinner, oiling spindles and tubes of.	3
2615	Darling, Samuel, 2d.....	Saw-mill, arranging the saw gate and fender posts of.	14
2783	Dauvergne, Peter L.....	Gold washing.....	2
2777	Davidson, Jesse W.....	Bee-hives.....	1
2826	Davis, Daniel, jr. (See John Plumbe, jr.)	Daguerreotype pictures, coloring.....	18
	Davis, Frederick. (See Levi Magers.)		
2602	Davis, George W., and George.	Steam engine, conducting off the steam from the cylinder.	6
2674	Day, Ebenezer.....	Clapboards, laths, staves, &c., cutting....	14
	Deardoff, Jacob. (See Isaac N. Lesh.)		
2765	Degen, Francis.....	Hats, setting or ironing brims of.....	3
2529	Delano, Howard.....	Plough, revolving, cutter for.....	1
	Denny, William H. (See Jno. J. Doane.)		
2558	Detmold, Christian Edward, assignee of Wilhelm von Faber Du Faur.	Furnace, &c., heating.....	2
2781	Deville, F.....	Wigs.....	21
2519	Dexter, Henry.....	Sculptors, apparatus for, &c.....	18
2630	Dibble, Maria P.....	Supporters, umbilical, combined with corsets.	20
2840	Dick, John.....	Boots and shoes.....	16
2719	Dickinson, David B.....	Safes for preserving meats, &c.....	17
2606	Diehl, Samuel.....	Water-wheel.....	11
2863	Doane, John J., and William H. Denny.	Coal sifters.....	5
	Dobbs, Geo. (See Uel West.)		
2790	Dominis, John.....	Sails, measuring, instrument for.....	7
2489	Douglass, Roswell, assignee of John H. Coburn.	Loom, weavers' shuttles.....	3
2895	Douglass, Wm. and Benjamin.	Pumps.....	11
2883	Dowell, William.....	Wigs.....	21
2891	Downer, Andrew O.....	Lock and latch-knobs, fastening to their spindles, &c.	2
2424	Draper, Francis.....	Lamps, glass, caps of.....	5
2464	Draper, George.....	Loom, power, rotary temples for.....	3
	Dukehart, Wm. (See Levi Magers.)		
2757	Durkee, Joseph.....	Water-wheel.....	11
2579	Durling, James.....	Flouring mills, combining a smut machine with the scouring stones.	13
2574	Duxbury, Caleb and Jas. Nield.	Loom, power.....	3
2658	Dyott, Michael B.....	Lamps, essential oils, burning.....	5
2627	Easterly, James.....	Grates, open.....	5
2578	Eastlack, Edwin, and Joseph A. Miller.	Gate, self-acting waste.....	11

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2454	Easton, Thomas S.	Explosion of boilers, preventing	6
2846	Easton, Thomas S.	Explosion of boilers, preventing	6
53	Easton, Thomas S.	Explosion of boilers, preventing	Add'l imp'ts.
41	Easton, Thomas S.	Explosion of boilers, preventing	Re-issue.
42	Easton, Thomas S.	Explosion of boilers, preventing	Re-issue.
46	Easton, Thomas S.	Explosion of boilers, preventing	Re-issue.
2764	Eley, Solomon M., and David N. Phelps.	Steam engine, rotary	6
2808	Eckler, James.	Spark arrestors	6
2535	Edday, Charles C.	Vinous fermentation.	4
62	Edday, Charles C.	Vinous fermentation.	Add'l imp'ts.
2772	Emmons, William.	Spikes, &c., clinching	2
	English, William. (See George T. Tate.)		
2533	Etzler, John A.	Navigating and propelling vessels by wind and waves.	7
2786	Eunson, Robert G.	Steam engine, discharging water and air from condensers of.	6
2795	Evans, Cadwallader	Boilers, steam, applying a float to regu- late the height of water in.	6
	Evarts, Harry H. (See Peck- ham H. Green.)		
2888	Ewbank, Thomas. (See Jor- dan L. Mott.)	Chimney caps.	5
2560	Fahnestock, A. K.	Brick press	15
2835	Fahrney, Samuel.	Smut-machine, separating garlic from wheat.	1
2633	Farnam, Daniel H.	Bee-hives.	1
	Farnum, Roswell. (See Wil- liam Jones.)		
2425	Fay, Jerub A.	Mortising timber	14
2884	Fentriss, Frederick	Washing machine.	17
2740	Ferre, Moses.	Buttons, &c., forming collets, washers, &c.	21
2870	Ferris, Peter	Ink, black, making.	4
	Field, Joshua. (See Joseph Maudslay.)		
	Fleming, Joseph. (See Webb Wallace.)		
2649	Flickinger, Daniel, and Sebas- tian Krim.	Smut machine, cleaning grain.	1
2696	Flint, Thomas.	Loom, power, weaving carpets, &c.	3
2520	Folger, Aaron.	Lamps and reflectors of light-houses, ar- ranging, &c.	5
2636	Foote, Elisha, jr.	Stoves, regulating the draft in.	5
2849	Foster, Matthew S.	Teeth, improvement in setting	20
2853	Foster, William.	Shingles, cutting	14
2715	Fowler, John.	Bedstead, fastening	17
2862	Francis, Aaron, and Jonathan Carlile.	Bee-hives.	1
2667	Freed, Abraham.	Saddles, spring.	16
2493	French, Arasmus.	Knitting stockings, &c.	3
2666	French, Ira, assignee of May- nard French.	Stoves, rotary top.	5
2701	Frew, Samuel.	Telegraphs	8
2889	Fry, John P.	Flax and hemp, braking.	3
2611	Fry, Samuel	Press, cotton	12
2555	Gardiner, P. G.	Press, cotton, hay, &c.	12
2537	Garfield, Samuel, sr., assignee of Thomas W. Harvey.	Mowing—scythes, fastening the nibs of. . .	1
2864	Geisendorff, J. C., G. W. & C. E.	Flax and hemp, cleaning and dressing. . . .	3
2553	Gilbert, David H.	Paper, &c., applying paste or sizing to sheets of, in process of making cards.	3

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2742	Gilbert, John S.....	Dock, floating dry	9
2900	Gilmore, John T.....	Waterwheel, inclined	11
2486	Gilroy, Clinton G. (See Jeremiah Wilbur.)	Loom.....	3
2603	Goodwin, Roderick.....	Churn	1
2763	Grannis, John.....	Lamps, lard.....	5
	Grannis, Sidney S. (See Howe.)	Loom harness, wire heddles.....	Reissue.
	Grant, Wm. (See Jas. Kerr.)		
2833	Gray, Albert W.....	Horse-power, endless chain.....	13
2455	Green, Peckham H., & Harry H. Evarts.	Steam engine, rotary, propelled by water or steam.	6
2466	Greenough, J. J.....	Sewing or stitching all kinds of straight saws.	16
2621	Greenwood, Miles, assignee of George E. Sellers.	Latch and lock, gravitating combined, for doors.	2
2610	Greenwood, Miles, assignee of George F. Sellers.	Latch, door, right and left.....	2
2433	Gregg, John	Air, condensing apparatus for, &c.....	6
2532	Gregg, Mahlon	Metal, plates or sheets of, cutting.....	2
2455	Grimes, William C.	Spark arrestors	6
2441	Griswold, Jesse	Barrels of guns and fire-arms, manner of combining.	19
2760	Grout, John R.....	Brakes of railroad cars, machinery for operating.	10
2645	Grumman, Elijah	Bee-hives	1
2876	Grylls, John.....	Capstans, or windlasses, ships', and cable stoppers.	7
2824	Guilford, Simeon.....	Iron, sheet, manufacturing.....	2
2735	Guiteau, Calvin.....	Salt works, improvement in.....	4
2676	Guss, Samuel, assignee of Wm. Clayton.	Brake or lock for arresting the motion of spring carriages.	10
2743	Gustin, John S. (See Peter Cooper.	Furnace, puddling and refining iron	2
	Guyon, Henry G.....	Press, lever	Disclaim'
2768	Hall, Alfred.....	Brick press.....	15
2704	Hamilton, James	Saw-mill gates for curvilinear sawing.....	14
2810	Hanks, Stedman W.....	Stoves	5
2769	Harding, Robert.....	Press, cotton, hay, &c., toggle joint.....	12
2839	Harlach, Jacob	Carriages, disengaging horses from.....	10
2832	Harn, William H.....	Tenons, cutting.....	14
59	Harrison, Joseph, jr.....	Car, railroad, &c.....	Add'l imp't
2782	Hart, Alexander H.....	Shingles, cutting.....	14
2537	Harvey, Thos. W. (See Sam'l Garfield.)	Mowing, nibs for scythes.....	1
2505	Hatch, Nathaniel.....	Composition, rendering cloth water-proof.	4
2867	Haupt, Henry Y, and Abraham, jr.	Kiln for drying grain.....	5
2500	Hawkins, Thomas. (See Jas. G. Wilson.)	Shears, tailors'.....	21
2471	Hean, John.....	Flour, bolting and dressing.....	13
2677	Hedge, Lemuel, and Edwin F. Johnson.	Saw-mill.....	14
2837	Hemming, John.....	Gas meters.....	6
2814	Hersch, Zachariah R.....	Bee-hives	1
2616	Hendrick, Benj. W., and Horace	Loom, weaving.....	3
2531	Henning, George.....	Saw-mill dog, self-setting	14
2860	Henry, Robert H.....	Wheels, felloes of carriage, machinery for shaping the inner side of.	10
2481	Herrick, Hiram H.....	Shingles, cutting.....	14
2775	Hicks, Lucien E., and Thomas Miner	Baths, medicated vapor.....	20

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2594	Hidden, Enoch, inventor in part with, and assignee of Samuel Sawyer. Higbee, Shuler C. (See Benjamin T. Babbitt.)	Cannon locks.....	19
2442	Hill, Selah.....	Dock, floating dry.....	9
2692	Hiser, Henry.....	Bee-hives.....	1
2800	Hilt, Daniel F.....	Churn.....	1
2496	Hoagland, John V. L.....	Spark arrestors.....	6
	Hobbs, Alfred C. (See Wm. S. Thompson.)		
2754	Hodges, Alexander, agent of New England Screw Company, assignee of Cullen Whipple.	Screws, wood, cutting threads of.....	2
2685	Hodges, Jonathan.....	Spark arrestors.....	6
2504	Hodgman, Daniel.....	Shoes, over.....	16
2656	Hoe, Richard M.....	Metallic surfaces, particularly saw-plates, grinding and polishing.	2
2629	Hoe, Richard M.....	Printing-press, double cylinder.....	18
2508	Holmes, William.....	Windlass and capstan, method of working ships.	7
2564	Homer, Daniel.....	Horse shoes for the relief and cure of hoof-bound horses.	2
2823	Hoover, Henry, assignee of Martin Stoner.	Cutting vegetables, &c.....	17
2678	Hopkins, Lansing F.....	Boilers, steam and generators.....	6
2641	Horn, Benjamin H.....	Lamps, lard.....	5
2413	Horn, Edwin B.....	Lamps.....	5
63	Horn, Edwin B.....	Lamps.....	Addit'l imp't.
2451	Hort, Benjamin S.....	Screening and sifting coals.....	5
	Horton, William F. (See Austin W. Sharp.)		
	Hough, Richardson T. (See John Benson.)		
2691	Houghton, Joel.....	Plough-beams.....	1
2599	Howd, Samuel B.....	Water-wheel.....	11
39	Howe, Abraham and Sidney S. Grandis.....	Loom harness, wire heddles.....	Reissue
2620	Hull, Nathan.....	Plough.....	1
2834	Humphrey, John.....	Veneers, &c., cutting from the circumference of a log.	14
54	Hungerford, Josiah.....	Truss.....	Addit'l imp't's.
2792	Hunt, Marshall J.....	Plough, cultivating.....	1
2737	Hunter, Jacob Van Reed.....	Furnace, smelting iron.....	2
2487	Hunter, William W.....	Navigation, steam, by which the submerged propeller is made to operate as an air-pump and condenser.	7
2856	Iba, William, assignee of Caspar Kittinger.	Veneering curved surfaces.....	14
2549	Ingalls, Elias F.....	Cutting leather into soles.....	16
2544	Irvin, David.....	Saddles.....	16
2785	Jacobs, William L.....	Pumps.....	11
2608	James, Theodorick J.....	Gin-saw, for ginning cotton.....	3
2690	Jenkins, Oliver.....	Drawers, improvement in.....	17
2554	Johnson, Arthur L.....	Window-shutters, or guards.....	9
	Johnson, Edwin F. (See Lemuel Hedge.)		
2475	Johnson, John C.....	Spark arrestors.....	6
2446	Joly, Charles.....	Water-wheel, &c., adjustable boxes, &c....	11
2731	Jones, Alexander.....	Gin, cotton, saw-cylinder for.....	3

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2458	Jones, A. B., assignee of William H. Jones.	Silk, reel for reeling.....	3
2525	Jones, H. C.....	Padlocks for mail-bags, &c.....	2
2618	Jones, James.....	Bee-hives.....	1
2727	Jones, Thomas L.....	Propelling and steering boats, &c.....	7
2896	Jones, William, and Roswell Farnum.	Steam engine, rotary.....	6
	Jones, William H. (See A. B. Jones.)		
2588	Keagy, Abraham, and Michael Shimer.	Spark arrestors.....	6
2556	Kellogg, Salvin F.....	Stoves, air-heating.....	5
2480	Kelly, John.....	Horse power, endless chain.....	13
2670	Kelly, William.....	Steam engine.....	6
50	Kelsey, James E., and James A. Potter.	Press, cotton.....	Addit'l imp'ts.
2612	Kerr, James, William Grant, and John Potter.	Vessels' lining, constructed of sheet-iron..	7
56	Kerr, James, William Grant, and John Potter.	Vessels' lining, constructed of sheet-iron..	Addit'l imp'ts.
47	Kerr, James, William Grant, and John Potter.	Vessels' lining, constructed of sheet-iron..	Reissue.
2663	Kilburn, Wells.....	Seeding, seed planters.....	1
2457	Kinney, Avery.....	Shingles, cutting.....	14
2601	Kintzi, George.....	Carriages, releasing horses from.....	10
2856	Kittinger, Casper. (See William Iba.)	Veneering machine.....	14
2415	Knipe, James.....	Bedstead, fastening.....	17
2730	Knowland, Joseph, and Jacob F. Krim, Sebastian. (See Daniel Flickinger.)	Garment measuring instruments.....	21
2422	Kropff, Frederick C.....	Furnace, smelting, constructing.....	2
2825	Laing, John.....	Propelling boats, &c., segmental spiral propellers.	7
2838	Lake, Andrew.....	Strabismus, goggles for.....	20
2546	Lamb, William.....	Water wheel.....	11
2829	Landis, Edmund.....	Truss.....	20
2689	Langdon, Barnabas.....	Plough.....	1
2726	Lansing, Eli B.....	Water wheel.....	11
2799	Lawrence, Isaac R.....	Horse-power, endless chain.....	13
2478	Leach, Harvey.....	Bridge, manner of crossing rivers, &c., by means of a moving platform suspended to a.	9
2831	Learned, Charles.....	Flax and hemp, cleaning and heckling...	3
2652	Learned, Samuel.....	Staves, dressing, for barrels, casks, &c.	14
2755	Leavitt, Daniel.....	Loom, securing the bobbin in shuttles for weaving.	3
2854	Lee, John.....	Lamps, lard.....	5
	Lee, Milo. (See Ebenezer Wilson.)		
2570	Lee, Stephen S.....	Lamps, hydro-pneumatic.....	5
2693	Lesh, Isaac N. & Silas W., Jacob Deardorff, and Zachariah Beeson.	Steam generator, improvement in.....	6
2463	Lewis, James.....	Spark arrestors.....	6
2545	Lighthall, William A.....	Steam engine, marine.....	6
2758	Lindley, Noah H.....	Churn.....	1
2523	Loud, Thomas.....	Pianoforte, shifting movement for square or horizontal.	18
2640	L'Veret, Peter F.....	Garments, measuring instrument.....	21
2728	Lyon, Charles.....	Composition, water-proof.....	4
2502	Macgregor, James, jr.....	Bomb, subterranean or mine.....	19
2541	Mackay, James.....	Composition for the hair.....	4
2653	Magers, Levi, Frederick Davis, and Wm. Dukehart.	Cocks, stop, for hydrants.....	11

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2604	Maltby, Benjamin K. (See Jesse Neal.)	Lamp.....	5
	Maltby, Benj. K. (See Jesse Neal.)		
2460	Mandell, David J.....	Ink-stands, manufacture of.....	18
2600	Marsh, Ebenezer.....	Candles, manufacture of.....	4
2657	Martine, Caleb.....	Press, cotton, hay, &c.....	12
2868	Mason, David H.....	Tanning by machinery.....	16
2650	Mason, John.....	Cultivator for vines.....	1
2668	Maudslay, Joseph, and Joshua Field.	Steam engine, marine.....	6
2746	McGrew, Alexander.....	Wind-mills.....	11
2688	McManaway, John C.....	Furnace, refining, iron.....	2
2796	McMillen, William.....	Flax and hemp, braking and cleaning....	3
	Merchant, Niram R. (See Abel Cornell.)		
2844	Merriam, T. P.....	Composition for preserving leather.....	4
38	Merrick, Solyman.....	Wrench, screw.....	Reissue.
2836	Miles, William.....	Water wheel, current.....	11
2592	Milholland, John, and Benjamin Crane.	Bee-hives.....	1
	Miller, Henry. (See Wm. A. Ronald.)		
	Miller, Joseph A. (See Edwin Eastlack.)		
2705	Miller, William H.....	Clasps for pantaloons straps, &c.....	21
	Miner, Thomas. (See Lucien E. Hicks.)		
2550	Mitchell, Reuben.....	Heating buildings.....	5
2694	Montrop, L.....	Tallow, rendering.....	4
2476	Morris, John.....	Cutting meat and other substances.....	17
	Morse, Lemuel. (See Benjamin R. Stevens.)		
2882	Moseley, Peter.....	Corn rows, &c., laying off.....	1
2887	Mott, Jordan L.....	Chimney caps.....	5
2888	Mott, Jordan L., assignee of Thomas Ewbank.	Chimney caps.....	5
2503	Mott, Jordan L.....	Stoves, cooking, tubular, &c.....	5
2465	Mulford, John H.....	Escapement of watches.....	8
2806	Munson, Sylvester.....	Shingles, cutting.....	14
2817	Murdock, Richard.....	Bonnets, &c., machinery for pressing....	3
37	Murray, Alexander J.....	Press, cotton, &c.....	Reissue.
2459	Murray, James & William.....	Corn and corn-cobs, breaking and grinding	13
2420	Myers, Lawrence.....	Statues, casting, method of.....	18
2712	Myers, Samuel.....	Plough.....	1
2604	Neal, Jesse, part inventor with and assignee of B. K. Maltby.	Lamps, lard.....	5
60	Neal, Jesse, part inventor with and assignee of B. K. Maltby.	Lamps, lard.....	Addit'l imp'ts.
2778	Nelson, George.....	Stoves.....	5
2574	Nield, Jas. (See Caleb Duxbury.)	Looms, power.....	3
2681	Norris, H. Ariel.....	Boring and tapping water and other pipes, while under hydrostatic pressure.	11
2794	Norris, H. Ariel.....	Boring, tapping, and reaming water pipes, under hydrostatic pressure.	11
45	Norris, H. Ariel.....	Boring and tapping water pipes, under hydrostatic pressure.	Reissue
2793	Northrup, Joel G.....	Printing press.....	18
2784	Norton, Hiram L.....	Plough.....	1
55	Olds, Calvin.....	Seeding, seed-sower, or corn planter.....	Addit'l imp'ts.
2828	Oliver, Ebenezer.....	Traps for rats, &c.....	22

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
48	Orr, Isaac.....	Stove, air-tight.....	Reissue.
2497	Osborne, John J., assignee of William H. Porter.	Anchors.....	7
2646	Osborne, Marmaduke.....	Felting for coats, hats, &c.....	3
2470	Otto, Henry C.....	Paint, white, mode of preparing	4
40	Packard, Austin, assignee of E. Andrews and S. Austin.	Stove, cooking.....	Reissue.
2642	Packard, Otis.....	Furnaces, cooking, and air-heating.....	5
2483	Packard, Otis	Heating buildings, apparatus for.....	5
	Page, Ezekiel. (See John Benson.)		
2818	Pagett, William C.....	Plough, shovel.....	1
2518	Parker, Edmund.....	Latch-thumb, for doors.....	2
2495	Parker, Joseph J.....	Steam engine, rotary.....	6
2662	Parks, Stephen, jr.....	Valves, cut off for steam engines.....	6
2879	Parsons, James, jr.....	Plough, combined	1
2474	Paulsen, Herman G. C.....	Glue, manufacture of.....	4
	Perry, Andrew. (See Alexander M. Bouton.)		
2811	Perry, Enoch W.....	Lamps, wick tubes for.....	5
2878	Peters, Warner L.....	Mortising and tenoning machine.....	14
2506	Petree, David.....	Stoves, Franklin, burning coal	3
2516	Pettibone, Daniel	Lamps, argand, volatile materials, burning.	5.
	Phelps, David N. (See Solomon M. Eby.)		
2851	Phillips, Philetus	Stoves	3.
2426	Piggott, Robert	Geography and astrology, apparatus for teaching.	8
2822	Pitts, James.....	Shearing satinets and other woolen cloths.	3.
	Plantz, Peter W. (See Benjamin T. Babbitt.)		
2826	Plumbe, John, jr., assignee of Daniel Davis, jr.	Daguerreotype pictures, coloring	18
2437	Pomeroy, Ralph.....	Steam engine.....	6
2752	Porter, Parry W.....	Press, cotton	12
2497	Porter, William H. (See John J. Osborne.)	Anchors.....	7
	Potter, James A. (See James E. Kelsey.)		
	Potter, John. (See James Kerr.)		
2815	Potts, John H.....	Sausage machine	17
2517	Pratt, Henry.....	Steam engine, rotary, propelled by steam, water, &c.	6
2530	Pratt, Joel, 3d	Bedstead sofa.....	17
2416	Quilliard, Claude S.....	Furnace, &c., reverberatory.....	2
2467	Ralston, Andrew	Threshing machine and winnowing grain.	1
2488	Read, Jonathan	Reaping machine	1
2679	Redheffer, William	Combs, slitting tortoise-shell for making..	21
2430	Reiley, Thomas W.....	Propelling boats by jets of water	7
2637	Remington, John R.....	Engine, pneumatic.....	11
2675	Remington, John R.....	Wind-wheels.....	11
2708	Rich, Reuben	Water wheel.....	11
	Richmond, Charles and Samuel Caswell, jr.	Spades & shovels.....	Discl'r.
2721	Rickey, John C.....	Sleighs or sleds, mode of locking	10
2713	Riddell, George W.....	Truss.....	20
	Ridgway, William, jr. (See John Stansbury.)		
2563	Ridgway, Jonathan.....	Cocks, stop.....	11
2722	Ridgway, Jonathan.....	Pipes—inserting branch pipes through the ground without excavating.	9
2767	Riley, Salmon C.....	Stove, cooking, utensils for.....	5
2473	Robinson, Enoch	Windlasses, or drums for raising weights..	12
2797	Robinson, Geo. W. and Ezra B.	Steering apparatus for vessels	7

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2452	Robinson, Geo. W. and Ezra B.	Window-sash, spring fastener	2
2873	Robinson, P.	Lamps, lard	5
2779	Rodgers, Henry	Pumps, liquor	11
2728	Roebbing, John A.	Boilers, steam, gauge, steam safety	6
2720	Roebbing, John A.	Ropes, wire, method of, and machinery for manufacturing.	2
2526	Rogers, William A.	Cultivator, cotton	1
2431	Ronald, William A. and Henry Miller.	Composition for dressing leather, to ren- der it water-proof.	4
2848	Roper, E. H., and Wm. Ball...	Padlocks	2
2707	Ross, James E.	Beehives	1
2885	Rowe, Bradford	Boot crimps	16
2509	Rudd, Daniel	Propelling ships and other vessels	7
2766	Rugg, Micah	Bolts, trimming the heads of	2
2686	Sanford, Joseph H.	Boot-legs, turning	16
2456	Sands, Marcellus	Washboard, for washing clothes	17
2805	Sargent, Charles G.	Wool, combing, machine for	3
	Sawyer, Samuel. (See Enoch Hidden.)		
2499	Sayre, Thomas O.	Stoves, cooking, semi-circular	5
	Schomacher, John. (See Chas. Bossert.		
	Seabury, Jacob. See (Jere- miah Clute.)		
2590	Seger, Hiram	Garments, measuring and cutting	21
2610	Sellers, George E. (See Miles Greenwood.)	Door-latch	2
2621	Sellers, George E. (See Miles Greenwood.)	Quadrant, bolt and lock	2
2587	Sexton, Samuel B.	Stoves, cooking	5
2865	Share, Philip T.	Steering wheel for vessels	7
2871	Sharp, Austin W., and William F. Horton.	Boilers, steam or generator	6
2893	Shaw, William F.	Lamps	5
2482	Shecut, William H.	Life-preservers, rendering chairs, &c., buoyant.	7
2632	Sheetz, Isaac	Sawmill, sawing felloes and other circu- lar stuff.	14
2566	Sheffield, John	Sawing boards, setting logs for	14
2659	Shepard, Benjamin	Stoves, culinary and air-heating	5
2886	Sherwood, John P.	Lock, door	2
	Shimer, Michael. (See Abra- ham Keagy.)		
2527	Shugert, John	Gudgeons, &c., self-oiling box for	13
2631	Sickels, Frederick Elsworth....	Valves, apparatus for lifting, tripping, and regulating the closing of the valves of steam engines.	6
	Sloan, James A. (See Oliver Brooks.)		
2787	Sloan, Thomas James	Shears, tailors'	21
	Smith, John. (See John Tay- lor.)		
2510	Smith, John C.	Harness, bridles	16
2780	Smith, John C.	Harness, bridles	16
2534	Smith, John H.	Candles, separating stearine from elaine..	4
2866	Smith, Nathan	Brakes, self-acting for inclined planes	10
2439	Smith, William W.	Printing press, construction of	18
2634	Snow, William W.	Furnace, tuyere irons	2
2552	Southwick, Joseph	Tanning by machinery	16
2703	Southworth, Frederick H.	Lamps, lard	5
2827	Southworth, Frederick H.	Lamps, lard	5
2664	Stanley, Henry	Ovens, elevated, valve for	5
2428	Stansbury, John and William Ridgaway, jr.	Oakum, picking, combination of machinery for.	3

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class
2417	Steiger, William T.....	Spikes, bolts, nails, and brads, cut and wrought.	2
2899	Stellwagen, Henry S.....	Sounding instruments.....	7
2522	Stevens, Benjamin R., and Lemuel Morse.	Daguerreotype impressions, mode of fixing	18
2524	Stevens, Edwin A.....	Steam engine, supplying air to the furnaces of.	6
2700	Stevens, John Hucks, assignee of C. E. Warner.....	Splints, match, cutting.....	14
2821	Stevens, Robert L.....	Constructing steam ships, propelling and turning.	7
2773	Stevens, Robert L.....	Steam engine, locomotive, connecting the driving wheels of.	6
2571	Stillman, Richard and Jesse Taylor.....	Clay, tempering, for bricks.....	15
2739	Stone, Chester, F. K. Collins, and Geo. S. Collins.	Press, cheese, self-acting.....	12
2747	Stone, Chester, F. K. Collins, and Geo. S. Collins.....	Press, cheese, self-acting.....	12
2823	Stoner, Martin. (See Henry Hoover.)	Cutting vegetables, &c.....	17
2749	Stratton, Charles.....	Shave for getting out wooden hoops, &c..	14
2491	Talson, Joseph F.....	Springs for railroad truck.....	10
2714	Tasker, Thomas T.....	Hydrants	11
2717	Tate, George T., and William English.	Hemp, breaking and cleaning	3
2732	Taylor, Jesse.....	Water-wheel	11
	Taylor, Jesse. (See Richard Stillman.)		
2655	Taylor, John, and John Smith.	Napping cloth machine, called cross-nap- ping machine.	3
2651	Taylor, Samuel.....	Loom, brushes for dressing warps.....	3
2762	Tefft, Jairus S.....	Plough.....	1
2438	Thayer, Augustus.....	Pumps.....	11
2774	Thomas, D. V.....	Sawmill, setting the foot-block of, &c....	14
	Thompson, R. H. (See J. H. Bruner.)		
2628	Thompson, William S., and Alfred C. Hobbs.	Knobs, glass.....	2
2572	Timby, Theodore R.....	Raising sunken vessels, &c.....	7
2613	Timby, Theodore R.....	Sleighs, connecting body with runner....	10
2582	Timby, Theodore R.....	Stone, dressing	15
	Titcomb, George. (See Ste- phen Bates.)		
2624	Tomlinson, Stephen	Carriages, spring-perch for.....	10
2855	Traband, Alfred.....	Oils, animal purifying	4
2598	Travor, Philip C	Propelling boats, &c.....	7
2539	Trumbull, Shadrach	Beehives	1
2841	Turner, Isaac W	Axes, machine for making	2
2869	Tuttle, Robert M.....	Lock, door, combination tumbler	2
2748	Valentine, Abram S.....	Boilers, steam.....	6
2736	Valentine, Samuel L.....	Water-wheel	11
2898	Valentine, Samuel L.....	Water-wheel	11
2798	Van Hoesen, Levi.....	Loom, weaving fish nets.....	3
2445	Van Hoesen, William C.....	Press, cotton.....	12
2706	Van Pelt, Abraham.....	Tanning hides	16
2558	Von Faber du Faur, Wilhelm. (See Christian, Edward Det- mold)		
2421	Waldo, George D	Smut-machine.....	1
2695	Walker, Andrew, jr.....	Stoves, cooking, heating, and illuminating	5
2729	Wallace, Webb, and Joseph Fleming.	Tanning hides by machinery	16
2453	Walter, Lorenzo D. and Jacob.	Screws, bolts, pins, and rivets, making...	2

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2584	Ward, Foster D.....	Saddles.....	16
2573	Ward, Gilbert S.....	Umbrellas.....	21
2733	Ware, Justin.....	Mill, grinding all kinds of grain.....	13
2700	Warner, Chauncey F. (See John Hucks Stevens.)	Splints, match, cutting.....	14
2803	Warren, Edmund.....	Straw-cutters.....	1
2548	Watt, George.....	Plough.....	1
2843	Webb, Aug. V. H.....	Lamps for volatile materials.....	5
2697	Webb, Joseph W.....	Straw-cutters.....	1
2547	Welchman, Edward.....	Resuscitation, apparatus for.....	20
	Weld, Edward D. (See Josiah N. Bird.)		
2501	Wendt, Hermann.....	Shears, tailors'.....	21
2738	West, Uel.....	Pipes, conduit coupling.....	11
2596	West, Uel, and Geo. Dobbs....	Cocks, stop.....	11
2754	Whipple, Cullen. (See Alexander Hodges.)	Screws, wood, cutting threads of.....	2
2528	White, Rollin.....	Loom, weaving bolting cloth, mounting and using the harness.	3
2673	Whitehead, Jesse.....	Spinning, regulating the drag of the yarn in the operation of.	3
64	Whitehead, Jesse.....	Spinning, regulating the drag of the yarn.	Add'nal imp'ts.
2593	Whitin, Nathaniel D.....	Cocks, or gas stoppers.....	11
2436	Whitman, Samuel S.....	Mop holders, manner of constructing....	17
	Whitney, Abram. (See Josiah Beard.)		
2665	Whitney, Esau & Jacob, and Wm. F. Card.	Water-wheel, reaction.....	11
2557	Wiard, Thomas.....	Plough.....	1
2583	Widerman, Samuel.....	Barrels, &c., chamfering, beveling, and howeling.	14
2486	Wilbur, Jeremiah, assignee of Clinton G. Gilroy.	Loom, weaving figured and other fabrics..	
2414	Wilkinson, Garner.....	Window blinds.....	9
2498	Williams, Samuel.....	Composition, covering the bottoms of vessels.	4
2447	Wilson, Ebenezer, and Milo Lee.	Butter, working, machines for.....	1
2500	Wilson, James G., assignee of Thomas Hawkins.	Shears, tailors'.....	21
2684	Wilson, John.....	Smut machine.....	1
2617	Wolfersberger, Frederick.....	Bee-hives.....	1
	Wood, Asa. (See Issachar Bates.)		
2813	Wood, James, sr., John Wood, and Wm. W. Wood.	Iron, sheet, manufacturing.....	2
2622	Woodard, Abijah.....	Water-wheel.....	11
2858	Woodward, Joshua.....	Cisterns, preventing water from freezing..	11
2374	Woodward, Thomas.....	Pens, metallic.....	18
2609	Woodward, Thomas.....	Shielded pins for securing shawls, &c....	2
	Woodworth, Wm. (See Wm. W. Woodworth.)		
	Woodworth, Wm. W.....	Planing, tonguing, and grooving.....	Exten'n
2567	Woolley, Williams.....	Bedstead for the sick.....	17
2448	Worrall, Zebulon.....	Lamps, lard.....	5
2791	Wright, Charles D.....	Saw-mill—tail blocks of, for setting the log.	14
2648	Wright, George L.....	Ruling paper.....	18
2638	Zahn, Godfried M.....	Lock and key, door.....	2
2468	Zeigler, William B.....	Stoves, cooking.....	5
2432	Zellers, Isaac.....	Threshing machine, concaves employed in..	1
2756	Zollickoffer, William.....	Bating hides.....	16

Alphabetical list of persons whose patents for designs have expired during the year 1856.

No.	Patentees.	Designs.
215	Baker, Isaac F., assignor to Cornelius & Co.....	Furniture ornaments.
216	Baker, Isaac F., assignor to Cornelius & Co.....	Furniture ornaments.
227	Barstow, A. C.....	Stoves, cooking.
237	Burton, S. H.....	Stoves.
235	Chambers, George W., assignor to A. Cox & Co.....	Stoves.
236	Chambers, George W., assignor to A. Cox & Co.....	Stoves.
249	Clark, Samuel, assignor to Johnson & Cox.....	Stoves.
250	Clark, Samuel, assignor to Johnson & Cox.....	Stoves.
251	Clark, Samuel, assignor to Johnson & Cox.....	Stoves.
210	Fay, Henry C.....	Stoves.
241	Finch, Edward B.....	Stoves.
234	Fulton, Calvin, assignor to John M. French.....	Stoves.
211	Gibbs, Samuel W., assignor to Jones & Finney.....	Stoves.
222	Gibbs, Samuel W., assignor to Augustus Quackenboss....	Stoves.
226	Gibbs, Samuel, W., assignor to North, Harrison & Co....	Stoves.
240	Gibbs, Samuel W., assignor to J. Cross & Son.....	Stoves.
252	Goodhue, D. F., and Charles Guild.....	Stoves.
219	Haney, Abram, assignor to J. & A. Morrison.....	Stoves.
221	Haney, Abram, assignor to Morrison & Tibbits.....	Stoves.
248	Haney, Abram, assignor to Morrison & Tibbits.....	Stoves.
253	Hill, Samuel, and William B. Cline.....	Stoves.
228	Hill, Samuel, and William B. Cline.....	Stoves.
244	Huntley, Hosea H.....	Stoves.
257	Huntley, Hosea H., assignor to W. C. Davis.....	Stoves.
238	Jewett, Sherman S., and F. H. Root.....	Stoves.
229	Lamb, Joseph G., and Conrad Harris.....	Stoves.
254	Lamb, Joseph G., and Conrad Harris.....	Stoves.
212	Lawson, Peter.....	Carpets.
213	Lawson, Peter.....	Carpets.
214	Lawson, Peter.....	Carpets.
209	Peck, N. P.....	Stoves.
243	Pond, Moses.....	Stove, air-tight..
220	Ransom, Samuel H.....	Stoves.
224	Ransom, Samuel H.....	Stoves.
225	Ransom, Samuel H.....	Stoves.
245	Rathbone, John F.....	Stoves.
216	Rathbone, John F.....	Stoves.
247	Rathbone, John F.....	Stoves.
231	Richmond, Apollos, assignor to A. C. Barstow & Co.....	Grate, portable.
230	Sanderson, Wm. L., assignor to Pease, Keeney & Gage...	Stoves.
355	Sanderson, Wm. L., assignor to Dunham, Collier & Sage..	Stoves.
239	Savery, William.....	Stoves.
256	Shaw, William F.....	Girandoles.
232	Wager, James.....	Stoves.
233	Wager, James.....	Stoves.
242	Wager, James.....	Stoves.
217	Waring, George E.....	Stoves.
223	Warnich, Charles W.....	Stoves.
218	Woolson, Charles J.....	Stoves.



Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Furnace, &c., heating.....	Christian Edward Detmold, assignee of Wilhelm Von Faber Du Faur.....	New York.....	April 16 1842, antedated Nov. 12, 1841.
Furnace, &c., reverberatory.....	Claude S. Quilliard.....	Wurtemberg.....	Jan. 8.
Furnace, improvement in.....	Jeremiah Clute and Jacob Seabury.....	Roudout, N. Y.....	Dec. 5.
Furnace, puddling and refining iron.....	Peter Cooper, assignee of John S. Gustin. John C. McManaway.....	Cohoes, N. Y.....	Aug. 2.
Furnace, refining iron.....	Frederick C. Kropff.....	New York.....	June 22.
Furnace, smelting, constructing.....	Jacob Van Reed Hunter.....	Portsmouth, Ohio.....	Jan. 17.
Furnace, smelting iron.....	Richard Brewer.....	Bedford, Penn.....	July 23.
Furnace, tuyeres.....	William W. Snow.....	Rockland, Penn.....	Nov. 21.
Furnace, tuyere irons.....	Peter L. Dauvergne.....	Plymouth, Ohio.....	May 20.
Gold, washing.....	William Baker.....	Oreonta, N. Y.....	Sept. 17.
Hinges, window-blinds and fastenings.....	Daniel Homer.....	Clarkeville, Ga.....	Sept. 17.
Horse-shoes for the relief and cure of hoof-bound horses.....	James Wood, sen., John Wood, and Wm. W. Wood.....	Utica, N. Y.....	April 16.
Iron, sheet, manufacturing.....	Simeon Guilford.....	Alton, Ill.....	Oct. 12.
Iron, sheet, manufacturing.....	William S. Thompson and.....	New Castle, Del.....	Oct. 23.
Knobs, glass.....	Alfred C. Hobbs.....	Lebanon, Penn.....	Oct. 20.
Latch and lock, gravitating, combined, for doors.....	Miles Greenwood, assignee of George E. Sellers.....	Cambridge, Mass.....	May 20.
Latch, door, right and left.....	Miles Greenwood, assignee of George E. Sellers.....	Boston, Mass.....	May 12.
Latch, thumb, for doors.....	Edmund Parker.....	Cincinnati, Ohio.....	May 7.
Lock, door.....	John P. Sherwood.....	Cincinnati, Ohio.....	March 28.
Lock, door, combination tumbler.....	Robert M. Tuttle.....	Meriden, Conn.....	Dec. 17.
Lock and key, door.....	Godfried M. Zahn.....	Sandy Hill, N. Y.....	Dec. 5.
Lock and latch knobs, fastening to their spindles, &c.....	Andrew O. Downer.....	Newark, N. J.....	May 26.
Lock or latch, check bolt of.....	Albert Bingham.....	Lancaster, Penn.....	Dec. 21.
Metal, plates or sheets of, cutting.....	Mahlon Gregg.....	Utica, N. Y.....	Oct. 17.
Metallic surfaces, particularly saw plates, grind- ing and polishing.....	Richard M. Illoe.....	Bratton, Mass.....	April 1.
		Wilmington, Del.....	May 30.
		New York.....	

Nails cutting, machinery for.....	Frederick J. Ayres.....	Roxbury, Mass.....	July 2, 1842.
Padlocks.....	E. H. Roper and Wm. Ball	Washington, D. C.....	Nov. 9.
Padlocks.....	William Ball	Washington, D. C.....	April 16.
Padlocks for mail bags, &c.....	H. C. Jones	Newark, N. J.....	April 1.
Punching machine for the manufacture of covered buttons.	Alonzo C. Arnold	Norwalk, Conn.....	April 23.
Ropes wire, method of and machinery for manufacturing.	John A. Roebling	Saxenburg, Penn.....	July 16.
Screws, bolts, pins, and rivets, making.....	Lorenzo D. Walter and.....	Fort Plain, N. Y.....	Feb. 7.
Screws, wood, cutting threads of.....	Jacob Walter.....	Springfield, N. Y.....	Aug. 18.
	Alexander Hodges, agent of New England Screw Company, assignee of Cullen Whipple.	Providence, R. I.....	
Shielded pins for securing shawls, &c.....	Thomas Woodward.....	Brooklyn, N. Y.....	May 7.
Spikes, &c., clinching.....	William Emmons	New York.....	Sept. 3.
Spikes, bolts, nails, and brads, cut and wrought..	William F. Steiger	Washington, D. C.....	Jan. 8.
Spikes, brads, and nails, clinching.....	James Buckalew.....	Spottawood, N. J.....	Sept. 3.
Spoons, casting, forming moulds for.....	Luther Boardman.....	Chester, Conn.....	Oct. 7.
Window-sash, spring fastener.....	George W. and Ezra B. Robinson.....	Boston, Mass.....	Feb. 7.

CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bonnets, &c, machinery for pressing.....	Richard Murdoch	Baltimore, Md	Oct. 12, 1842.
Carding and spinning machines.....	Moses Chase	Baltimore, Md.....	March 23.
Felting for coats, hats, &c.....	Marnaduke Osborne	New York.....	May 28.
Flax and hemp, breaking.....	John P. Fry.....	Pulaski, Tenn.....	Dec. 21.
Flax and hemp, breaking and cleaning.....	William McMillen	Ripley, Ohio.....	Sept. 30.
Flax and hemp, cleaning and dressing.....	J. C. G. W. and C. E. Geisendorff.....	Cincinnati, Ohio.....	Nov. 28.
Flax and hemp, cleaning and heckling.....	Charles Learned.....	St. Louis, Mo.....	Oct. 22.
Furs, process of blowing and cleaning.....	John W. Cochran.....	New York.....	Nov. 4.
Gin, cotton, saw cylinder for.....	Alexander Jones.....	New York.....	July 20.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Gin roller, for ginning long staple cotton.....	Eloazer Carver	Bridgewater, Mass.....	Jan. 17, 1842.
Gin saw, for ginning cotton.....	Theodoric I. James.....	Princeton, Mass.....	May 7.
Hats, cassimere	Oliver Brooks and James A. Sloan	Philadelphia, Penn	Nov. 9.
Hats, setting or ironing brims of	Francis Degen.....	New York.....	Aug. 31.
Hemp, breaking and cleaning.....	George T. Tate and William English	Frankford, Mo.....	July 11.
Knitting stockings, &c.	Arasmus French.....	Springfield, Mass.....	March 18.
Loom, brushes for dressing warps.....	Samuel Taylor.....	Lowell, Mass.....	May 28.
Loom, power	Caleb Duxbury and James Nield.....	Taunton, Mass.....	April 21.
Loom, power, rotary temples for.....	George Draper	Saugus, Mass.....	Feb. 21.
Loom, power, weaving carpets, &c.....	Thomas Flint.....	Boston, Mass.....	June 27.
Loom, power, weaving counterpanes, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	July 28; antedated May 1.
Loom, power, weaving counterpanes, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	Aug. 2; antedated May 1.
Loom, securing the bobbin in shuttles for weaving.....	Daniel Leavitt.....	Cabotville, Mass.....	Aug. 18.
Loom, temples for	Josiah Beard and Abram Whitney	Waltham, Mass.....	April 6.
Loom, weavers' shuttles	Roswell Douglass, assignee of John H. Coburn.....	Lowell, Mass.....	March 12.
Loom weaving.	Benj. W. and Horace Hendrick	Woonsocket Falls, R. I.....	May 12.
Loom, weaving bolting cloth, mounting and using the harness.....	Rollin White	Williamstown, Vt.	April 1.
Loom, weaving carpets, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	May 16; antedated May 1.
Loom, weaving carpets, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	May 26; antedated May 1.
Loom, weaving counterpanes, &c., manner of mounting, improvement on patent of April 24, 1840.....	Erastus B. Bigelow.....	Lancaster, Mass.....	May 30; antedated May 1.
Loom, weaving figured and other fabrics..... {	Jeremiah Wilber, assignee of.....	New York.....	March 12; antedated Nov. 12, 1839.
Loom, weaving fish-nets	Clinton G. Gilroy	Great Britain.....	Oct. 7.
Napping cloth machine, called cross napping machine.....	Levi Van Hoesen	New Haven, Conn.....	May 4.
	John Taylor and John Smith.....	New Lebanon, N. Y	

Oakum, picking, &c.	Otis Allen	Towksbury, Mass.	July 16, 1842.
Oakum, picking, combination of machinery for	John Stansbury and William Ridgway, Jr.	Baltimore, Md.	Jan. 17.
Paper, &c., applying paste or sizing to sheets of, in process of making cards, &c.	David H. Gilbert	Dorchester, Mass.	April 11.
Paper, sizing	Lorenzo D. Brown	Lee, Mass.	March 4; antedated Sept. 4, 1841.
Shearing satinets and other woollen cloths	James Pitts	Smithfield, R. I.	Oct. 17.
Silk, reel for reeling	A. B. Jones, assignee of William H. Jones	Manchester, Conn.	Feb. 12.
Spinning, cap-spinner, mode of driving bobbins in	Charles Danforth	Pater-son, N. J.	April 21.
Spinning, cap-spinner, oiling spindles and tubes of	Charles Danforth	Pater-son, N. J.	April 21.
Spinning, regulating the drag of the yarn in the operation of	Jesse Whitehead	Manchester, Va.	June 14.
Spinning, twisting, and kinking hair	Hiram Burnham	New York	June 22.
Wool-combing, machine for	Charles G. Sargent	Lowell, Mass.	Oct. 7.

CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including medicine, dyeing, color making, distilling, soap and candle making, mortars, cements, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Blacking for leather.....	Samuel Adams.....	Cleveland, Ohio.....	May 30, 1842.
Candles, manufacture of.....	Ebenezer Marsh.....	Alton, Ill.....	April 30.
Candles, separating stearine from elaine.....	John H Smith.....	Brooklyn, N. Y.....	April 1.
Composition, covering the bottoms of vessels.....	Samuel Williams.....	New York, N. Y.....	March 18.
Composition for dressing leather to render it water proof.	William A. Ronald and Henry Miller.....	Rowan county, N. C.....	Jan. 24.
Composition for preserving leather.....	T. P. Meriam.....	New Bedford, Mass.....	Nov. 4.
Composition for the hair.....	James Mackay.....	New York.....	April 6.
Composition, preparation for the hair.....	Vair Clirehugh.....	New York.....	April 11.
Composition, rendering cloth water proof.....	Nathaniel Hatch.....	Eastport, Maine.....	March 23.
Composition, water proof.....	Charles Lyon.....	New York.....	Sept. 23.
Gas metres.....	Christopher F. Brown.....	Baltimore, Md.....	June 22.
Glue, manufacture of.....	Herman G. C. Paulsen.....	New York.....	Feb. 28.
Ink, black, making.....	Peter Ferris.....	Greenwich, Conn.....	Dec. 5.
Matches, friction, ignitable compound.....	Stephen Blaisdell.....	Brunswick, Maine.....	March 18.
Matches, friction, improvement in.....	George W. Carleton.....	Bath, Maine.....	May 20.
Oils, animal, purifying.....	Alfred Traband.....	New York.....	Nov. 21.
Paint, white, mode of preparing.....	Henry C. Otto.....	Philadelphia, Penn.....	Feb. 25.
Salt works, improvement in.....	Calvin Giteau.....	Geddes, N. Y.....	July 23.
Tallow, rendering.....	L. Montrop.....	Baltimore, Md.....	June 27.
Vinous fermentation.....	Charles C. Edday.....	Benton, Miss.....	April 1; antedated Mar. 4.

CLASS V.—CALORIFICS, comprising lamps, fire-places, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Chimney caps	Jordan L. Mott	New York	Dec. 17, 1842.
Chimney caps	Jordan L. Mott, assignee of Thomas Ewbank.	New York	Dec. 17.
Chimney cowls	Stephen M. Allen	Boston, Mass	April 21.
Coal sifters	John J. Doane and William H. Denny	New York	Nov. 28.
Flue contractors, or chimney valves for fire-places and grates.	Henry Batchelder	Beverly, Mass	Jan. 8.
Furnaces, cooking and air-heating	Otis Packard	Roxbury, Mass	May 26.
Grates, open	James Easterly	Troy, New York	May 16.
Heating buildings	Reuben Mitchell	Portland, Maine	April 11.
Heating buildings, apparatus for	Otis Packard	Roxbury, Mass	March 9.
Kiln for drying grain	Henry Y. and Abraham Haupt, jr.	Bucks county, Penn	Dec. 5
Lamps	Edwin B. Horn	Boston, Mass	Jan. 8.
Lamps	William F. Shaw	Boston, Mass	Dec. 31.
Lamps, argand, spirits of turpentine, &c, burning.	Charles Carr	Philadelphia, Penn	March 23.
Lamps, argand, volatile materials, burning	Daniel Pettibone	Philadelphia, Penn	March 23.
Lamps, essential oils, burning	Michael B. Dyott	Philadelphia, Penn	May 30.
Lamps for volatile materials	A. V. H. Webb	New York	Nov. 4.
Lamps, glass, caps of	Francis Draper	East Cambridge, Mass	Jan. 17.
Lamps, hydro-pneumatic	Stephen S. Lee	Providence, R. I.	April 21.
Lamps, lard	Archibald H. Baird	New York	May 26.
Lamps, lard	Benjamin H. Horn	Boston, Mass	May 26.
Lamps, lard	Ellis S. Archer	Philadelphia, Penn	June 18.
Lamps, lard	Frederick H. Southworth	Washington city, D. C.	July 2.
Lamps, lard	Frederick H. Southworth	Washington, D. C.	Oct. 22.
Lamps, lard	Jesse Neal, part inventor with and assignee of—	Middlebury, Ohio	May 4.
Lamps, lard	Benjamin K. Maltby	Rootstown, Ohio	Aug. 25.
Lamps, lard	John Grannis	Oberlin, Ohio	Nov. 21
Lamps, lard	John Lee	Welleville, Ohio	

Classified list of expired patents—Continued.

Inventions or discoveries.	Patentees	Residence.	Date of patent.
Lamps, lard.....	John T. Creighton	Alexandria, Va.....	Aug. 11, 1842.
Lamps, lard.....	P. Robinson.....	Chillicothe, Ohio.....	Dec. 5.
Lamps, lard.....	Zebulon Worrall.....	Chesterhill, Ohio.....	Feb. 7.
Lamps, wick tubes for.....	Enoch W. Perry.....	Boston, Mass.....	Oct. 12.
Lamps and reflectors of light-houses, arranging, &c.	Aaron Folger.....	Nantucket, Mass.....	March 28.
Ovens, elevated, valves for.....	Henry Stanley.....	West Poultney, Vt.....	June 11.
Ranges, cooking.....	John Brereton.....	New York.....	April 21.
Screening or sifting coals.....	Benjamin S. Hort.....	Kensington, Penn.....	Feb. 7.
Stoves.....	Abel Cornell and Niram R. Merchant.....	Guilford, N. Y.....	July 16.
Stoves.....	George Nelson.....	Boston, Mass.....	Sept. 17.
Stoves.....	Stedman W. Hanks.....	Lowell, Mass.....	Oct. 12.
Stoves.....	Philetus Phillips.....	Middletown Point, N. J.....	Nov. 12.
Stoves, air-heating.....	Salvin F. Kellogg.....	Norwalk, Ohio.....	April 16.
Stoves, air-tight.....	Stephen M. Allen.....	Boston, Mass.....	Jan. 17.
Stoves, air-tight.....	Zephaniah Bosworth.....	Marietta, Ohio.....	April 6.
Stoves, cooking.....	Anson Atwood.....	Troy, N. Y.....	May 4.
Stoves, cooking.....	Erastus Buck.....	Nunda, N. Y.....	Aug. 6.
Stoves, cooking.....	Samuel B. Sexton.....	Baltimore, Md.....	April 29.
Stoves, cooking.....	William Beebe.....	New York.....	July 8.
Stoves, cooking.....	William B. Zeigler.....	Huntingdon, Penn.....	Feb. 21.
Stoves, cooking, elevated ovens, with.....	Moses Bartholomew.....	Vershire, Vt.....	July 2.
Stoves, cooking, heating and illuminating.....	Andrew Walker, jr.....	Unity, N. H.....	June 27.
Stoves, cooking, semi-circular.....	Thomas O. Sayre.....	Elizabethtown, N. J.....	March 23.
Stoves, cooking, tubular, &c.....	Jordan L. Mott.....	New York, N. Y.....	March 23.
Stoves, cooking, utensils for.....	Salmon C. Riley.....	New York.....	Aug. 31.
Stoves, culinary and air-heating.....	Benjamin Shepard.....	Boston, Mass.....	May 30.
Stoves, Franklin burning coal.....	David Petree.....	Little Falls, N. Y.....	March 23.
Stoves, regulating the draft in.....	Elisha Foote, jr.....	Serena Falls, N. Y.....	May 26.
Stoves, rotary-top.....	Ira French, assignee of Maynard French.....	Cincinnati, Ohio.....	June 11.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Air condensing, apparatus for, &c.	John Gregg	Rochester, N. Y.	Jan. 24, 1842.
Boilers, steam.	Abram S. Valentine	Bellefonte, Pa.	August 6.
Boilers, steam.	Charles Clinton	Goshen, N. Y.	April 29.
Boilers, steam, applying a float to regulate the height of water in.	Cadwallader Evans	Pittsburg, Pa.	Sep. 30.
Boilers, steam, gauge, steam safety	John A. Roebling	Saxonsburg, Pa.	July 16.
Boilers, steam, and generator	Lansing E. Hopkins	New York	June 18.
Boilers, steam, or generator	Austin W. Sharp and William F. Horton ..	Honeoye Falls, N. Y.	Dec. 5.
Explosion of boilers, preventing	Thomas S. Easton	Mobile, Ala.	Feb. 12.
Explosion of boilers, preventing	Thomas S. Easton	Mobile, Ala.	Nov. 9.
Gas metres	John Henning	Great Britain	Nov. 4.
Spark arrestors	Abraham, Keagy, and Michael Shimer ..	Woolbury, Pa.	April 29.
Spark arrestors	James Eckler	Catskill, N. Y.	Oct. 7.
Spark arrestors	James Lewis	Saratoga, N. Y.	Feb. 21.
Spark arrestors	John C. Johnston	Catskill, N. Y.	Feb. 28.
Spark arrestors	John V. L. Hoagland	Jersey City, N. J.	March 18.
Spark arrestors	Jonathan Hodges	Taunton, Mass.	June 22.
Spark arrestors	Louis Chevrier	Brooklyn, N. Y.	Feb. 21.
Spark arrestors	Samuel G. Brown	Henrietta, N. Y.	Sep. 23.
Spark arrestors	William C. Grimes	York, Pa.	Feb. 12.
Spark arrestors and consumers	Abraham Ayres	Hicksville, N. Y.	Feb. 28.
Steam engine	Alexander Connison	Newark, N. J.	Dec. 5.
Steam engine	Ralph Pomeroy	Belleville, N. J.	Jan. 24.
Steam engine	William Kelly	Pittsburg, Pa.	June 18.
Steam engine, changing reciprocating into rotary motion.	Alexander M. Bouton and Andrew Perry ..	Newark, N. J.	Aug. 18.
Steam engine, conducting off the steam from the cylinder.	George W. and George Davis	Canal Fulton, Ohio	May 4.
Steam engine, discharging water and air from condensers of.	Robert G. Eunson	New York	Sep. 23.
Steam engine, locomotive, connecting the driving wheels of.	Robert L. Stevens	New York	Sep. 3.

Classified list of expired patents—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Steam engines, locomotive, constructing by which they adapt themselves to the curves and undulations of the road.	Matthias W. Baldwin.....	Philadelphia, Pa.....	Aug 25, 1842.
Steam-engine, marine.....	Joseph Maudslay and Joshua Field.....	Lambeth, England.....	June 11; antedated May 7, 1839.
Steam-engine, marine.....	William A. Lightall.....	Albany, N. Y.....	April 11.
Steam-engine, reacting, &c.....	Louis Brunier.....	France.....	Oct. 25.
Steam-engine, rotary.....	Joseph J. Parker.....	Plymouth, Ohio.....	March 18.
Steam-engine, rotary.....	Joshua Taylor Beale and Benjamin Beale.	East Greenwich, England.....	June 11; antedated July 13, 1841.
Steam-engine, rotary.....	Solomon M. Eby and.....	Wayne county, Ohio.....	Aug. 26.
Steam-engine, rotary.....	David N. Phelps.....	Richland county, Ohio.....	Dec. 31.
Steam-engine, rotary, propelled by steam, water, &c.....	William Jones and Roswell Farnum.....	Bradford, Vt.....	March 28.
Steam engine, rotary, propelled by water or steam	Henry Pratt.....	Great Britain.....	March 9.
Steam-engine, supplying air to the furnaces of..	Pockham H. Green and Harry H. Evarts.	Mount Morris, N. Y.....	April 1.
Steam-generator, improvement in.....	Edwin A. Stevens.....	Bordentown, N. J.....	June 27.
Valves, apparatus for lifting, tripping, and regulating the closing of the valves of steam-engines.	Isaac N. Lesh, Silas W. Lesh, Jacob Deardoff, and Zachariah Beeson.	Wayne county, Ind.....	May 27.
Valves, cut off for steam-engines.....	Frederick Elsworth Sickels.....	New York.....	April 30.
Valves, cut off for steam-engines.....	Horatio Allen.....	New York.....	June 11.
	Stephen Parks, jr.....	Brooklyn, N. Y.....	

CLASS VII.—NAVIGATION AND MARITIME IMPLEMENTS, comprising all vessels for conveyance on water, their construction, rigging, and propulsion, diving-dresses, life-preservers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
<p> Anchors Capstans or windlasses, ships', and cable-stoppers Constructing paddle-wheels, and combining the same with steam-vessels. Constructing ships, boats, &c, to be propelled by steam or other power. Constructing steam-ships, propelling and turning. Life-preservers, rendering chairs, &c., buoyant. Navigating and propelling vessels by wind and waves. Navigation, steam, by which the submerged propeller is made to operate as an air-pump and condenser. Propelling and steering boats, &c. Propelling boats, &c. Propelling boats, &c., segmental spiral propellers. Propelling boats and extinguishing fire. Propelling boats by endless chains of paddles. Propelling boats by jets of water. Propelling paddle-buckets, &c. Propelling ships and other vessels. Propelling steamboats and other vessels. Raising sunken vessels, &c. Sails, measuring, instrument for. Sounding instruments. Steering apparatus for vessels. Steering-wheel for vessels. </p>	<p> John J. Osborne, assignee of William H. Porter. John Grylla Alexander Connison Elisha F. Aldrich Robert L. Stevens William H. Shecut John A. Etzler William W. Hunter Thomas L. Jones Philip C. Traver John Laing Stephen Bates and George Titcomb Appleton Bragg Thomas W. Reily A. Ralston Chase Daniel Rudd Truman Cook Theodore R. Timby John Dominea Henry S. Stellwagen George W. and Ezra B. Robinson Philip T. Share </p>	<p> New York Great Britain Portsea, England Newark, N. J. New York New York New York Philadelphia, Pa. Gosport, Va. New York Rhinebeck, N. Y. Ellicott's Mills, Md. Boston, Mass. New York McMinn county, Tenn. Cincinnati, Ohio Bozrah, Conn. New York Auburn, N. Y. Now residing in the Sandwich Islands U. S. Navy Boston, Mass. Baltimore, Md. </p>	<p> March 18; antedated August 15, 1839 Dec. 12; antedated December 31, 1840. June 18, 1842. July 8. Oct. 17. March 9. April 1; antedated November 20, 1841. March 12, 1842. July 16. April 30. Oct. 22. March 4; antedated September 4, 1841. Jan. 24, 1842. Jan. 24. Nov. 9. March 23. May 12. April 21. Sept. 30. Dec. 31. Sept. 30. Nov. 28. </p>

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Vessels' lining, constructed of sheet iron.....	James Kerr, William Grant, and John Potter.	Pittsburg, Pa.....	May 7, 1842.
Windlass, ships'.....	William Carr.....	Bath, Me.....	Feb. 7.
Windlass and capstan, method of working ships'.	William Holmes.....	Baltimore, Md.....	Mar. 23.

CLASS VIII.—MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENTS, including clocks, chronometers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Clocks, self-winding.....	Evans, Casselberry.....	St. Louis, Mo.....	Aug. 2, 1842.
Escapement of watches.....	John H. Mulford.....	Albany, N. Y.....	Feb. 21.
Galvanic battery, &c.....	Patrick Coad.....	Philadelphia, Pa.....	Mar. 28.
Geography and astrology, apparatus for teaching	Robert Piggot.....	Elk Ridge Landing, Md.....	Jan. 17.
Surveying instruments.....	Benjamin H. Benton.....	Middleburg, Va.	Dec. 12.
Surveyors, instruments for plotting.....	William J. Card.....	Lancaster, Ohio.....	April 16.
Telegraphs.....	Samuel Frew.....	Elizabeth, Penn.....	July 3.

CLASS IX.—CIVIL ENGINEERING AND ARCHITECTURE, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, etc.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bridge, manner of crossing rivers, &c., by means of a moving platform suspended to a.	Harvey Leach	Philadelphia, Pa.....	Mar. 4, 1842.
Dock, floating dry	John S. Gilbert.....	New York.....	July 28.
Dock, floating dry	Selah Hill.....	Jersey City, N. J.....	Feb. 1.
Excavating ditches.....	Herrick Aiken.....	Franklin, N. H.....	Feb. 1.
Excavating, ditching, and embanking earth.....	Horace Cleveland.....	Fort Wayne, Ind.....	Dec. 31.
Excavating, ditching, and embanking, scraper for.	John Branson, jr.....	Sangamon county, Ill.....	Mar. 18.
Excavating, ditching, embanking, and draining prairie lands, &c.	Cromwell K. Bartlett.....	Geneseo, Ill.....	Mar. 23.
Pipes, inserting branch-pipes through the ground without excavating.	Jonathan Ridgway	New York.....	July 16.
Roofing, cast-iron.....	William Beach.....	Philadelphia, Pa.....	April 23.
Roofs, metallic, rendering, water-tight.....	John U. Boesch.....	Charleston, S. C.....	Nov. 12.
Window-blinds.....	Garner Wilkinson.....	White Creek, N. Y.....	Jan. 8.
Window-shutters or guards.....	Arthur L. Johnson.....	Baltimore, Md.....	April 11.

CLASS X.—LAND CONVEYANCE, comprising carriages, cars, and other vehicles used on roads, and parts thereof.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brake or lock for arresting the motion of spring (carriages }	Samuel Guss, assignee of.....	West Chester, Penn.....	June 18, 1842.
Brakes of railroad cars, machinery for operating.	William Clayton.....	Marshallton, Penn.....	
Brakes, self-acting, for inclined planes.....	John R. Grout.....	Utica, N. Y.....	Aug. 25.
Carriages, disengaging horses from.....	Nathan Smith	Waterloo, N. J.....	Nov. 28.
	Jacob Harlacher.....	Lancaster, Penn.....	Nov. 4.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Carriages, releasing horses from.....	George Kintzi.....	Exeter, Penn.....	May 4, 1842.
Carriages, spring perch for.....	Stephen Tomlinson.....	Bridgeport, Conn.....	May 16.
Sleighs, connecting body with runner.....	Theodore R. Timby.....	Auburn, N. Y.....	May 7.
Sleighs or sleds, mode of locking.....	John C. Rickey.....	New Cumberland, Ohio.....	July 16.
Springs for carriages.....	Jonathan Bacon.....	Bedford, Mass.....	March 9.
Springs for railroad truck.....	Joseph F. Talcott.....	Jersey City, N. J.....	March 18.
Tires, putting on wheels of railroad cars.....	Thomas Banks.....	Manchester, England.....	Aug. 25.
Wheels, felloes of carriage, machinery for shaping the inner side of.....	Robert H. Henry.....	Barre, Mass.....	Nov. 21.

CLASS XI.—HYDRAULICS AND PNEUMATICS, including water-wheels, wind-mills, and other implements operated on by air or water, or employed in the raising and delivery of fluids.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boring and tapping water and other pipes while under hydrostatic pressure.	H. Ariel Norris.....	New York.....	June 22, 1842.
Boring, tapping, and reaming water pipes under hydrostatic pressure.	H. Ariel Norris.....	New York.....	Sept. 30.
Cisterns, preventing water from freezing.....	Joshua Woodward.....	Haverhill, N. H.....	Nov. 21.
Cocks, manufacture of.....	Charles A. Creasey.....	Philadelphia, Penn.....	April 29.
Cocks or gas stoppers.....	Nathaniel D. Whittin.....	New York.....	April 29.
Cocks, stop.....	Jonathan Ridgway.....	New York.....	April 16.
Cocks, stop.....	Uel West and George Dobbs.....	New York.....	April 30.
Cocks, stop, for hydrants.....	Levi Magers, Frederick Davis, and Wm. Dukehart.....	Baltimore, Md.....	June 22.
Engine, fire.....	Joseph Briggs, jr.....	St. Louis, Mo.....	Sept. 3.

Engine, pneumatic.....	John R. Remington	Aberfoill, Ala.....	May 26, 1842.
Filters	Thomas Bishop.....	Dobbs' Ferry, N. Y.....	Dec. 31.
Gate, self-acting waste.....	Edwin Eastlack and Joseph A. Miller	Greenwich, N. J.....	April 21.
Hydrants	John Lee Chapman	Baltimore, Md.....	Oct. 12.
Hydrants	Thomas T. Tasker	Philadelphia, Penn.....	July 11.
Hydraulic machines.....	Louis Brunier	France, (now in city of New York)	July 8.
Pipes conduit, coupling.....	Uel West	New York.....	July 23.
Pumps	Augustus Thayer.....	Chatham, N. Y.....	Feb. 1.
Pumps	William and Benjamin Douglas	Middletown, Conn.....	Dec. 31.
Pumps	William L. Jacobs	Lancaster, Penn.....	Sept. 23.
Pumps and fire engines.....	Benjamin T. Babbitt	Little Falls, N. Y.....	Oct. 7.
	Shuler C. Higbee and Peter W. Plantz ..	Oppenheim, N. Y.....	
Pumps, liquor.....	Henry Rodgers	Moravia, N. Y.....	September 17.
Water-wheel	Abijah Woodard	Swansey, N. H.....	May 12.
Water-wheel	Amasa B. Beckwith	Bath, N. Y.....	July 2.
Water-wheel	Eli B. Lanning	Wheeling, Ind	July 16.
Water-wheel	Jesse Taylor.....	Auburn, N. Y.....	July 20.
Water-wheel	Joseph Durkee	Binghampton, N. Y.....	August 25.
Water-wheel	Lemuel W. Blake and George W. Blake.	Pepperell, Mass.....	April 21.
Water-wheel	Reuben Rich	Albion, N. Y.....	July 8.
Water-wheel	Samuel B. Howd.....	Arcadia, N. Y.....	April 30.
Water-wheel	Samuel Diehl.....	Manallen, Penn	May 4.
Water-wheel	Samuel L. Valentine	Bangor, Me.....	July 23; antedated March 28.
Water-wheel	Samuel L. Valentine	Bangor, Me.....	December 31.
Water-wheel	William Lamb.....	Whitestown, N. Y.....	April 11.
Water-wheel, &c., adjustable boxes, &c.	Charles Joly.....	New York.....	February 7.
Water-wheel, current	William Miles	Boonsboro', Md.....	October 26.
Water-wheel, inclined	John T. Gilmore.....	Fayetteville, N. C.....	December 31.
Water-wheel, reaction	Esau Whitney, Jacob Whitney, and Wm. F. Card.	Burns, N. Y.....	June 11.
Wind-mills.....	Alexander McGrew	Cincinnati, Ohio	August 2.
Wind-wheels	John R. Remington	Aberfoill, Ala.....	June 18.

CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, as applied to pressing, weighing, raising, and moving weights.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Press, cheese	Sylvanus Bartlett	Hocking county, Ohio.....	February 28, 1842.
Press, cheese, self-acting	Chester Stone	Rootstown, Ohio	July 28.
Press, cheese, self-acting	Fitch K. Collins and George S. Collins.....	Ravenna, Ohio.....	August 6.
Press, cotton.....	Chester Stone	Rootstown, Ohio.....	August 11.
Press, cotton.....	Fitch K. Collins and George S. Collins.....	Ravenna, Ohio.....	February 1.
Press, cotton.....	Parry W. Porter.....	Columbia, Tenn.....	May 7.
Press, cotton, hay, &c.....	William C Van Hoesen.....	Catskill, N. Y.....	May 30.
Press, cotton, hay, &c.....	Samuel Fry	New York.....	April 16.
Press, cotton, hay, &c.....	Caleb Martine	Greensburgh, N. Y.	March 23.
Press, cotton, hay, &c.....	P. G. Gardiner	New York.....	September 3.
Press, cotton, hay, &c.....	S. W. Bullock	Catskill, N. Y.....	February 28.
Press, cotton, hay, &c, toggle joint.....	Robert Harding	South Berwick, Me.....	
Windlasses, or drums, for raising weights.....	Enoch Robinson	Boston, Mass.....	

CLASS XIII.—GRINDING MILLS AND MILL-GEARING, including grain mills, mechanical movements, and horse powers.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Corn and corn cobs, breaking and grinding.....	James and William Murray	Baltimore, Md.....	Feb. 12, 1842.
Flour, bolting and dressing	John Hean.....	Anncville, Pa.....	Feb. 28.
Flouring mills, combining a smut-machine with the scouring stones.	James Durling.....	Sparta, N. J.....	April 21.
Gudgeons, &c., self-oiling box for.....	John Shugert.....	Elizabeth, Pa.....	April 1.
Horse power, endless chain	Albert W. Gray	Middletown, Vt.....	Oct. 26.
Horse power, endless chain	Isaac R. Lawrence.....	Chatham, N. Y.....	Oct. 7.
Horse power, endless chain	John Kelly.....	Lewistown, Pa.....	March 4.
Mill, bark, grain, &c., grinding.....	Valentine Birely	Frederick, Md.....	July 11.
Mill, grinding all kinds of grain.....	Justin Ware.....	Farmington, Ohio	July 20.
Millstones	Joseph H. Burrows	Cincinnati, Ohio	April 23.

CLASS XIV.—LUMBER, including machines and tools for preparing and manufacturing, such as sawing, planing, mortising, shingle and stave, carpenters' and coopers' implements.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Barrels, &c., chamfering, beveling, and boweling.	Samuel Wideman	Elyaville, Md.	April 23, 1842.
Barrels and other coopers' ware, machine to be used in combination with improved iron hoops in the manufacture of.	J. H. Bruner and R. H. Thompson.	Ohio	Nov 12.
Clapboards, laths, staves, &c., cutting.	Ebenezer Day	Grand Detour, Ill.	June 18.
Fence pickets, &c., turning.	Elisha Briggs	Perry, N. Y.	July 20.
Mortising and tenoning machine.	Warner L. Peters	Frankfort, Pa.	Dec. 12.
Mortising timber.	Jerub A. Fay	Keene, N. H.	Jan. 17.
Pegs, shoe, machine for cutting.	Stephen K. Baldwin	Gilford, N. H.	July 16.
Sawing boards into oars for rowing boats.	John Benson, and Ezekiel Page and Richardson T. Hough.	Boston, Mass.	May 26.
Sawing boards, setting logs for.	John Sheffield	West Leyden, N. Y.	} April 16.
Saw-mill.	Lemuel Hedge and Edwin F. Johnson.	Williamson, N. Y.	
Saw-mill, arranging the saw-gate and fender-posts of.	Samuel Darling, 2d.	New York	June 18.
Saw-mill dog, self-setting.	George Henning	Groton, Vt.	May 7.
Saw-mill gates, for curvilinear sawing.	James Hamilton	Ithaca, N. Y.	April 1.
Saw-mill, portable.	Pearson Crosby	New York	July 2.
Saw-mill saw, mode of straining.	Ransom Cook and Sylvester E. Barnham.	Fredonia, N. Y.	Oct. 7.
Saw-mill, sawing felloes and other circular stuff.	Isaac Sheetz	Saratoga, N. Y.	Feb. 1.
Saw-mill, setting the foot-block of, &c.	D. V. Thomas	Taneytown, Md.	May 20.
Saw-mill, tail-blocks of, for setting the log.	Charles D. Wright	Richfield, N. Y.	Sept. 17.
Shave for getting out wooden hoops, &c.	Charles Stratton	Colechester, Conn.	Sept. 30.
Shingles, cutting.	Alexander H. Hart	Brattleboro', Vt.	Aug. 6.
Shingles, cutting.	Avery Kinney	Chagrin Falls Ohio	Sept. 17.
Shingles, cutting.	Daniel M. Cummings	Homer, N. Y.	Feb. 12.
Shingles, cutting.	Hiram H. Herrick	East Lebanon, N. H.	May 7.
Shingles, cutting.	Sylvester Munson	Boston, Mass.	March 9.
Shingles, cutting.	William Foster	Dillon, Ill.	Oct. 7.
Splints, match, cutting.	John Hucks Stevens, assignee of Chauncey E. Warner.	Detroit, Mich.	Nov. 21.
		New York	July 2.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Staves, dressing, for barrels, casks, &c.....	Samuel Learned	Ridgway, N. Y.	May 30, 1842; antedated Nov. 30, 1841.
Tenons, cutting.....	William H. Ham.....	Chambersburg, Penn.....	Oct. 26.
Veneering curved surfaces	William Iba, assignee of Casper Kittinger.	East Greenville, Ohio.....	Nov. 21.
Veneers, &c., cutting from the circumference of a log.	John Humphrey	Harrington, N. J.....	Oct. 26.
Wood, manufacturing, to be used as a substitute for curled hair in stuffing beds.	William Baker.....	Utica, N. Y.	May 30.

CLASS XV.—STONE AND CLAY MANUFACTURES, including machines for pottery, glass-making, brick-making, dressing and preparing stone, cements, and other building materials.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brick-press	A. K. Fahnestock.....	Harrisburg, Penn.....	April 16, 1842.
Brick-press	Alfred Hall.....	Cleveland, Ohio.....	Sept. 3.
Brick-press	Antoine Carbonel	Philadelphia, Pa.....	May 12.
Clay, tempering for bricks	Richard Stillman and Jesse Taylor	Kensington, Pa.....	April 21.
Glass, window, flattening and tempering.....	John J. Adams	Spring Garden, Pa.....	Oct. 17.
Moulds, sugar, making.....	Antoine Carbonel	Winslow, N. J.....	April 29.
Stone, dressing	Theodore R. Timby	Philadelphia, Pa.....	April 23.
		Auburn, N. Y.....	

CLASS XVI.—LEATHER, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bating hides	William Zollickoffer.....	Middlebury, Md.....	Aug. 18, 1842.
Boot crimps	Bradford Rowe	Maryland, N. Y.....	Dec. 17.
Boot legs, turning	Joseph H. Sanford	Hopewell, N. Y.....	June 22.
Boots and shoes	John Dick	Philadelphia, Penn.....	Nov. 4; antedated Oct. 15.
Boots and shoes	Joshua S. Bowler	Lynn, Mass.....	Nov. 21.
Buttons, forming, worked on the heads, handles, &c., of whips.	Robert S. Brown.....	Philadelphia, Penn	Feb. 21.
Cutting leather into soles	Elias T. Ingalls.....	Haverhill, Mass.....	April 11.
Harness, bridles	John C. Smith.....	Brookhaven, N. Y.....	March 23.
Harness, bridles	John C. Smith.....	Brookhaven, N. Y.....	Sept. 17.
Saddles	David Irvin	Madison, Wis. Ter	April 11.
Saddles	Foster D. Ward	Bellbrook, Ohio.....	April 23.
Saddles, spring	Abraham Freed.....	Marietta, Penn.....	June 11.
Sewing or stitching all kinds of straight seams ..	J. James Greetough.....	Washington city, D. C.....	Feb. 21.
Shoes, over	Daniel Hodgman.....	New York, N. Y.....	March 23.
Tanning by machinery	David H. Mason.....	Dahlonaga, Ga.....	Dec. 5.
Tanning by machinery	Joseph Southwick.....	Boston, Mass.....	April 11.
Tanning hides	Abraham Van Pelt	Bedminster, N. J.....	July 8.
Tanning hides by machinery	Webb Wallace and.....	Lehman Township, Penn.....	July 20.
	Joseph Fleming.....	Sandiston Township, N. J.....	

CLASS XVII.—HOUSEHOLD FURNITURE, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather-dressing, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bedstead.....	Charles W. Curtis.....	New Haven, Conn.....	Dec.
Bedstead fastening.....	Daniel Ball.....	Sandy Hill, N. Y.....	April 16.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bedstead fastening.....	James Knipe.....	New York.....	Jan. 8, 1842.
Bedstead fastening.....	John Fowler.....	Pittsburg, Pa.....	July 11.
Bedstead for the sick.....	Williams Woolley.....	New York.....	April 16.
Bedstead, sofa.....	Joel Pratt, 3d.....	Hartford, Conn.....	April 1.
Bread, raising.....	Abel Conant.....	Lowell, Mass.....	Oct. 12.
Brushes, manufacturing.....	John J. Adams.....	Boston, Mass.....	March 12.
Chair, rocking.....	Charles L. Bauder.....	Utica, N. Y.....	April 6.
Cutting meat and other substances.....	John Morris.....	Derby, Conn.....	Feb. 28.
Cutting vegetables, &c.....	Henry Hoover, assignee of Martin Stoner.	Waynesboro', Pa.....	Oct. 22.
Drawers, improvement in.....	Oliver Jenkins.....	Boston, Mass.....	June 22.
Mop-holders, manner of constructing.....	Samuel S. Whitman.....	Little Falls, N. Y.....	Jan. 24.
Safes for preserving meats, &c.....	David B. Dickinson.....	Baltimore, Md.....	July 16.
Sausage machine.....	John H. Potts.....	Fayette, Mo.....	Oct. 12.
Washboard for washing clothes.....	Marcellus Sands.....	Franklin, N. Y.....	Feb. 12; antedated Feb 7.
Washing machine.....	Frederick Fentries.....	Greensboro', N. C.....	Dec. 12.

CLASS XVIII.—ARTS, POLITE, FINE, AND ORNAMENTAL, including music, painting, sculpture, engraving, books, paper, printing, binding, jewelry, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Copying machine.....	Luman Carpenter.....	Oswego, N. Y.....	Dec. 31, 1842.
Daguerreotype impressions, mode of fixing.....	Benjamin R. Stevens and Lemuel Morse.	Lowell, Mass.....	March 28.
Daguerreotype pictures, coloring.....	John Plumbe, jr., assignee of Daniel Davis, jr.	Boston, Mass.....	Oct. 22.
Inkstands, manufacture of.....	David J. Mandell.....	Springfield, Mass.....	Feb. 21.
Pens, metallic.....	Thomas Woodward.....	Brooklyn, N. Y.....	Dec. 1.
Pens, metallic.....	Timothy Alden.....	Barre, Mass.....	Dec. 12.
Piano-forte.....	Charles Bossert and John Schomacher.....	Philadelphia, Pa.....	April 29.

Piano-forte, shifting movement for square or horizontal	Thomas Loud	Philadelphia, Pa.	April 1, 1842.
Printing-press	Joel G. Northrup	Corlensville, N. Y.	Sept. 30.
Printing-press, construction of	William W. Smith	New York	Feb. 1.
Printing-press, double cylinder	Richard M. Hoe	New York	May 20.
Ruling paper	George L. Wright	Springfield, Mass.	May 28.
Sculptors, apparatus for, &c.	Henry Dexter	Boston, Mass.	Mar. 28.
Seraphines, improvement in	James A. Bazin	Canton, Mass.	June 22.
Statues, casting, method of	Lawrence Myers	Philadelphia, Pa.	Jan. 8.

CLASS XIX.—FIRE-ARMS AND IMPLEMENTS OF WAR, and parts thereof, including the manufacture of shot and gunpowder.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Barrels of guns and fire-arms, manner of combining.	Jesse Griswold	Chambers county, Ala.	Feb. 1, 1842.
Bomb, subterranean or mine.	James MacGregor, jr.	Wilton, N. Y.	Mar. 23.
Cannon locks	Enoch Hidden, inventor in part with and assignee of Samuel Sawyer.	New York	April 29.
Cannon, wrought-iron and steel	Ransom Cook	Saratoga, N. Y.	Feb. 1.

CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, including trusses, dental instruments, bathing apparatus, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Baths, medicated vapor.	Lucien E. Hicks and Thomas Miner	Middletown, Conn.	Sept. 17, 1842.
Resuscitation, apparatus for	Edward Welchman	Cold Spring, N. Y.	April 11.
Strabismus, goggles for.	Andrew Lake	Flatbush, N. Y.	Nov. 4.
Supporters, umbilical, combined with corsets	Maria P. Dibble	New York	May 20.
Teeth, improvement in setting.	Matthew S. Foster	Trenton, N. J.	Nov. 12.
Truss	Edmund Landis	Lancaster, Pa.	Oct. 22.
Truss	George W. Riddell	Knightstown, Ind.	July 11.

CLASS XXI.—WEARING APPAREL, articles for the toilet, &c., including instruments for manufacturing.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Buttons, &c., forming collars, washers, &c.....	Moses Ferre.....	Williamsburg, Massachusetts.....	July 23, 1842.
Glasps for pantaloons straps, &c.....	William H. Miller.....	New York.....	July 8.
Combs, splitting tortoise shell for making.....	William Redheffer.....	Penn Township, Pa.....	June 18.
Garments, measuring and cutting.....	Hiram Seger.....	Macon, Georgia.....	April 29.
Garments, measuring instruments.....	Henry C. Brundage.....	Middletown, N. Y.....	Feb. 7.
Garments, measuring instruments.....	Joseph Knowland & Jacob F. Knowland	Brownboro', Kentucky.....	July 20.
Garments, measuring instruments.....	Peter F. L'Veret.....	Warrenton, Georgia.....	May 26.
Shears, tailors'.....	Hermann Wendt.....	New York, N. Y.....	March 23.
Shears, tailors'.....	James G. Wilson, assignee of Thos. Hawkins	New York, N. Y.....	March 23.
Shears, tailors'.....	Thomas James Sloan.....	New York.....	Sept. 23.
Umbrellas.....	Gilbert S. Ward.....	Newark, New Jersey.....	April 21.
Wigs.....	F. Deville.....	Baltimore, Maryland.....	Sept. 17.
Wigs.....	William Dowell.....	Philadelphia, Pennsylvania.....	Dec. 12.

CLASS XXII.—MISCELLANEOUS.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Cigars, making.....	Jonathan Ball.....	Buffalo, New York.....	Oct. 12, 1842.
Tents, portable.....	James Harrison Dakin.....	New Orleans, Louisiana.....	May 30.
Traps for rats, &c.....	Ebenezer Oliver.....	Philadelphia, Pennsylvania.....	Oct. 22.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Carpets	Peter Lawson	Lowell, Mass.	April 3, 1842
Carpets	Peter Lawson	Lowell, Mass.	April 3.
Carpets	Peter Lawson	Lowell, Mass.	April 3.
Furniture ornaments	Isaac F. Baker, assignor to Cornelius & Co.	Philadelphia, Penn	April 10.
Furniture ornaments	Isaac F. Baker, assignor to Cornelius & Co.	Philadelphia, Penn	April 10.
Girandoles	William F. Shaw	Suffolk county, Mass	Dec. 18.
Grate, portable	Apollon Richmond, assignor to A. C. Barstow & Co.	Providence, R. I.	Sept. 11.
Stoves	Joseph G. Lamb and Conrad Harris	Cincinnati, Ohio	Dec. 11.
Stoves	Samuel Hill and William B. Cline	Philadelphia, Penn	Dec. 4.
Stoves	D. F. Goodhue and Charles Guild	Cincinnati, Ohio	Dec. 4.
Stoves	Samuel Clark, assignor to Johnson & Cox	Troy, N. Y.	Nov. 13.
Stoves	Samuel Clark, assignor to Johnson & Cox	Troy, N. Y.	Nov. 13.
Stoves	Samuel H. Ransom	Albany, N. Y.	June 26.
Stoves	Samuel H. Ransom	Albany, N. Y.	June 26.
Stoves	Charles W. Warnich	Philadelphia, Penn	June 26.
Stoves	Samuel W. Gibbs, assignor to Augustus Quackenbush	Albany, N. Y.	June 26.
Stoves	Henry C. Fay	Troy, N. Y.	March 10; antedated Dec. 2, 1848.
Stoves	N. P. Peck	Springfield, Mass.	Jan. 23.
Stoves	Samuel W. Gibbs, assignor to Jones & Finney	Albany, N. Y.	March 20.
Stoves	George E. Waring	Patonsburg, Va	April 10.
Stoves	Charles J. Woolson	Stamford, Conn.	April 10.
Stoves	Abram Haney, assignor to J. & A. Morrison	Cleveland, Ohio	April 10.
Stoves	Samuel H. Ransom	Troy, N. Y.	April 17.
Stoves	Abram Haney, assignor to Morrison & Tibbits	Albany, N. Y.	April 24.
Stoves		Troy, N. Y.	May 8.

Classified list of expired patents for designs—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Stoves.	S. W. Gibbs, assignor to	Albany, N. Y.	July 10, 1849.
Stoves.	North, Harrison & Co.	Philadelphia, Penn.	July 17.
Stoves.	Samuel Hill and William B. Cline.	Philadelphia, Penn.	Dec. 25.
Stoves.	Hosea H. Huntley, assignor to William C. Davis.	Cincinnati, Ohio.	Dec. 18.
Stoves.	William L. Sanderson, assignor to Dunham, Collier & Sage.	Troy, N. Y.	Aug. 7.
Stoves.	Joseph G. Lamb and Conrad Harris.	Cincinnati, Ohio.	Aug. 21.
Stoves.	William L. Sanderson, assignor to Pesse, Keeney & Gage.	Troy, N. Y.	Sept. 25.
Stoves.	James Wager.	Troy, N. Y.	Sept. 25.
Stoves.	James Wager.	Troy, N. Y.	Sept. 25.
Stoves.	Calvin Fulton, assignor to John M. French.	Rochester, N. Y.	Sept. 25.
Stoves.	Geo. W. Chambers, assignor to A. Cox & Co.	Troy, N. Y.	Oct. 9.
Stoves.	Geo. W. Chambers, assignor to A. Cox & Co.	Troy, N. Y.	Oct. 9.
Stoves.	S. H. Burton.	Cincinnati, Ohio.	Oct. 9.
Stoves.	Sherman S. Jewett and F. H. Root.	Buffalo, N. Y.	Oct. 9.
Stoves.	William Savery.	New York, N. Y.	Oct. 9.
Stoves.	Samuel W. Gibbs, assignor to	Albany, N. Y.	Oct. 9.
Stoves.	J. Cross & Son.	Morrisville, N. Y.	Oct. 16.
Stoves.	Edward B. Finch.	Peekskill, N. Y.	Oct. 23.
Stoves.	James Wager.	Troy, N. Y.	Oct. 23.
Stoves.	Hosea H. Huntley.	Cincinnati, Ohio.	Oct. 23.
Stoves.	John F. Rathbone.	Albany, N. Y.	Oct. 23.
Stoves.	John F. Rathbone.	Albany, N. Y.	Oct. 23.
Stoves.	John F. Rathbone.	Albany, N. Y.	Oct. 23.
Stoves.	Abrahan Haney, assignor to Morrison & Tibbitts.	Troy, N. Y.	Nov. 6.
Stoves.	Samuel Clark, assignor to Johnson & Cox.	Troy, N. Y.	Nov. 13.
Stove, air-tight.	Moses Pond.	Boston, Mass.	Oct. 23.
Stoves, cooking.	A. C. Barstow.	Providence, R. I.	July 10.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16137	Allen, Frederic.....	Mop-heads.....	Dec. 2, 1856.....	XVII.
14991	Allen, John F., assignor to N. L. Cole.....	Valves, slide, for steam-engines, operating.....	May 27, 1856.....	VI.
807	Allen, John F., assignor to Stratton & Massey.....	Stoves, cooking.....	June 17, 1856.....	Design.
15109	Allen, Lucien H., assignor to L. H. Allen and E. M. Ivens.....	Wheels, car, casting.....	June 10, 1856.....	X.
14219	Allen, Z. (See Dawley, B. G., assignor.).....			
14993	Ailender, John.....	Scissors.....	Feb. 12, 1856.....	XVII.
	Alley, William.....	Uterine supporters.....	June 3, 1856.....	XX.
15504	Allyn & Hager. (See Hager, Abraham, and Youngs Allyn.).....	Supporters, invalid.....	Aug. 12, 1856.....	XX.
14342	Alston, James T.....			
	Alston, W., and S. J. Lewis. (See Lewis & Alston.).....	Marble in taper form, machines for sawing.....	Mar. 4, 1856.....	XV.
16000	Amazeen, Christopher.....	Ship's windlass, the pawl cases of a, machinery for operating.....	Nov. 4, 1856.....	VII.
14548	Ames, Nathan.....	Stamp, self-inking.....	April 1, 1856.....	XVIII.
16167	Ames, Nathan, assignor to Boston Hand Stamp Co. Ames, Winslow.....	Stamp, hand.....	Dec. 2, 1856.....	XVIII.
816	American Railroad Chair Manufacturing Company. (See Carson, Samuel.).....	Stove, box, plate.....	July 15, 1856.....	Design.
15873	Anderson, B. G.....	Bridge, canal.....	Oct. 14, 1856.....	IX.
14435	Anderson, Homer.....	Steel, welding.....	Mar. 18, 1856.....	II.
16108	Anderson, J. J. McLaren, and J. Bryant.....	Lathe for cutting fluted mouldings.....	Nov. 25, 1856.....	XIV.
16001	Anderson, Robert, and Aaron H. Vancleve.....	Metals, cutting.....	Nov. 4, 1856.....	II.
	Anderson, Shroder & Russell. (See Shroder, Richard, assignor.).....			
16223	Andrews, Emanuel.....	Saws, grinding, machine for.....	Dec. 16, 1856.....	XIV.
14394	Andrews, Solomon.....	Lamps, gas-burning.....	June 3, 1856.....	V.

15270	Andrews, Solomon	Locks, pad.	July 8, 1856.	II.
16234	Andrews, Solomon	Locks, pad, case for.	Dec. 16, 1856.	II.
353	Apperly, William	Cars, &c., railroad, ticket register for.	Feb. 19, 1856.	Reissue.
14584	Appleby, Stephen N.	Drying wet grain, &c., machine for.	April 8, 1856.	V.
14758	Applegate, Enoch	Chain-cable hooks.	April 29, 1856.	VII.
15597	Artail, Charles J. P.	Water, method of applying one stream of, to assist in raising another.	Aug. 26, 1856.	XI.
15271	Armitage, Robert G.	Fires, method of extinguishing.	July 8, 1856.	V.
16042	Armstrong, Francis	Brakes, bumper, for railroad cars.	Nov. 11, 1856.	X.
16262	Armstrong, John	Boilers, steam.	Dec. 23, 1856.	VI.
14981	Arnett, William D.	Cars, railroad, replaceable axle box for.	May 27, 1856.	X.
14589	Arnold, Aaron	Propeller-shafts in keels, enclosing.	April 8, 1856.	VII.
15163	Arnold, Asa	Saw for sawing-machines, self-setting or self-raking.	June 24, 1856.	XIV.
362	Arnold, John, deceased, legal representatives of, assignors to Union Manufacturing Company.	Web for cloth of wool, hair, or other substance, machine for forming the, without spinning or weaving.	Mar. 18, 1856.	Reissue.
15464	Arnold, Samuel	Trap, fly.	Aug. 5, 1856.	XXII.
15722	Arnold, S.	Trap, fly.	Sept. 23, 1856.	XXII.
403	Arthur, Robert	Cans, preserve, self-sealing.	Oct. 14, 1856.	Reissue.
370	Arthur, Robert	Preserve-cans, self-sealing.	June 10, 1856.	Reissue.
15214	Ashe, William A.	Tire on wheels, mode of securing.	July 1, 1856.	X.
14995	Ashenfelder, Josiah	Marble sawing machines.	June 3, 1856.	XV.
14436	Ashley, Lewis C.	Planes, bench.	Mar. 18, 1856.	XIV.
	Ashman, George, and Chas. Phelps. (See Hayes, Augustus A., assignor.)			
14897	Aspinwall, Jas. N., assignor to himself and Henry E. Staff.	Rolling file-blanks.	May 13, 1856.	II.
15114	Atkins, George	Planters, corn, hand.	June 17, 1856.	I.
15680	Atwood, A.	Mill, metallic, hemispherical grinding, dress of.	Sept. 9, 1856.	XIII.
15871	Atwood, Chas, deceased, Lydia Atwood, and C. O. Crosby, administrators of.	Pins in paper, sticking.	Oct. 14, 1856.	II.
15874	Atwood, Chas, deceased, Lydia Atwood, and C. O. Crosby, administrators of.	Pins, papering.	Oct. 14, 1856.	II.
16199	Atwood, Charles, deceased, Lydia Atwood & C. O. Crosby, administrators of.	Pins, machines for sticking.	Dec. 9, 1856.	II.
15506	Atwood, L. & W.	Oil from bitumens, preparing oil from.	Aug. 12, 1856.	IV.
15506	Atwood, L. & W.	Oil from cannel coal, production of.	Aug. 12, 1856.	IV.
15456	Atterbury, Thomas B., and William Warwick, assignors to Warwick, Atterbury & Co.	Locks, face-plate for.	July 29, 1856.	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Atterbury, Warwick, & Co. (See Knauer, Christian, assignor)			
14045	Aubin, N.....	Gas, illuminating, making.....	Jan. 8, 1856.....	IV.
14996	Aubin, N.....	Gas-retorts, feeding apparatus for.....	June 3, 1856.....	IV.
14847	Auld, O. G., and J. S. Whiting.....	Gold-washing, riddle for.....	May 13, 1856.....	II.
15160	Aultman, Cornelius, and Lewis Miller, assigns to Ball Aultman, & Co.	Mowing-machines.....	June 17, 1856.....	I.
15549	Averill, Levi.....	Kilns, lime.....	Aug. 19, 1856.....	XV.
14044	Avery, B. F.....	Ploughs.....	Jan. 8, 1856.....	I.
14130	Avery, Benjamin F.....	Plough-handles, &c, machine for bending.....	Jan. 22, 1856.....	XIV.
15115	Avery, Cyrus.....	Marble-sawing machine.....	June 17, 1856.....	XV.
15572	Avery, Otis.....	Button-holes, guides for working.....	Oct. 14, 1856.....	III.
15679	Avery, Wyllys.....	Saw-set.....	Sept. 9, 1856.....	XIV.
14131	Ayres, J. A.....	Gates, farm, method of opening and closing.....	Jan. 24, 1856.....	IX.
14644	Ayres, J. A.....	Water, mechanism by which cattle raise, for themselves.....	April 15, 1856.....	XI.
	Babbitt, B. T., S. C. Higbee, and P. W. Plantz.....	Pumps and fire-engines.....	Oct. 7, 1856.....	Extension.
16263	Babcock, G. H.....	Printing presses.....	Dec. 23, 1856.....	XVIII.
15639	Babson, David.....	Printing presses, feeding sheets of paper to, machine for.....	Sept. 2, 1856.....	XVIII.
15406	Bailey, Alfred.....	Pegging-jacks.....	July 29, 1856.....	XVI.
16109	Bailey, F. L.....	Printing presses.....	Nov. 25, 1856.....	XVIII.
14686	Bailey, Gilbert L.....	Door-springs.....	April 15, 1856.....	II.
14532	Bailey, John A.....	Marble in obelisk form, machine for sawing.....	Mar. 25, 1856.....	XV.
	Bailey, John A. (See Speed & Bailey)			
15466	Bailey, John A., assignor to John Warrin.....	Fishing-rods, reel for.....	Aug. 5, 1856.....	XXII.
	Bailey, Mitchell, & Co. (See Vance, Samuel B. H., assignor.)			
	Bailey, Mitchell, & Co. (See Vance, Samuel B. H., assignor.)			
	Bailey, Mitchell, & Co. (See Vance, Samuel B. H., assignor.)			

14799	Bailey, Stephen A., and Russell Wheeler. (See Wheeler & Bailey.)	Shoemakers head-blocks, pegging-jacks, or	May 6, 1856.	XVI.
15467	Bailey, Stephen A., and Russell Wheeler. (See Wheeler & Bailey.)	Mortising machine	Aug. 5, 1856.	XIV.
15632	Bailey, Thomas D.	Brace	Aug. 26, 1856.	XIV.
14592	Baird, Daniel N., assignor to Nathaniel Potter.	Hydrants, waste attachment for	April 8, 1856.	XI.
14549	Baker, Edward J.	Lubricator	April 1, 1856.	IV.
14759	Baker, Henry N.	Telegraphs, printing, electro magnetic	April 29, 1856.	VIII.
	Baker, William	Window-blind hinges and fastenings	Sept. 9, 1856.	Extension.
16162	Baker, William S., and L. John Mallard. (See Mallard & Baker)	Paper stock, engine for grinding	Dec. 2, 1856.	III.
	Falcon, V. O., and C. H. Hill.	Engines, locomotive, steam, manner of constructing, by which they adapt themselves to the curves and the undulations of the road.	Aug. 19, 1856.	Extension.
16168	Baldwin, David	Printing presses, feeding paper to, machine for.	Dec. 9, 1856.	XVIII.
16117	Baldwin, Stephen K.	Wheel, journeyron turbine	Nov. 25, 1856.	XI.
409	Baldwin, Stephen K.	Shoe-peg machine for cutting.	Nov. 4, 1856.	Reissue.
	Baldwin, Stephen K.	Shoe-peg machine for cutting.	July 8, 1856.	Extension.
14550	Ball, Benjamin G.	Vice-bench	April 1, 1856.	II.
15507	Ball, Charles G. (See Plant & Ball)	Mowing machines	Aug. 12, 1856.	I.
15753	Ball, G. W., & Co. (See Gibbs, S. W., assignor.)	Ovens	Sept. 23, 1856.	V.
14182	Ball, H.	Ore washer	Feb. 5, 1856.	II.
14944	Ball, William	Steam-stamps, operating.	May 27, 1856.	VI.
14543	Ball, Thomas C., assignor to Nathaniel Lamson.	Scythe fastening	Mar. 25, 1856.	I.
146	Ballard, William.	Vessels, war, projecting bulwarks for.	July 1, 1856.	Add'l imp't.
15465	Banker, Taggart & Grover. (See Taggart & Grover, assignors.)	Doors, weather strip or	Aug. 5, 1856.	IX.
14760	Bannon, Abraham. (See Rodgers & Bannon.)	Pen and pencil case	April 29, 1856.	XVIII.
15223	Banta, Jas. H.	Fog-bell, electro-magnetic.	July 15, 1856.	VII.
14220	Baptis, Edward.	Tonguing and grooving tapering boards, method of	Feb. 12, 1856.	XIV.
	Barbarin, Arthur, & B. F. Sinms			
	Barber, B. J.			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15273	Barber, H. B.	Wells, water from, method of drawing	July 8, 1856.	XI.
14335	Barden, John S., assignor to himself and Aaron W. Rockwood.	Hydraulic metre.	Feb. 26, 1856.	XI.
14761	Barlow, Milton.	Harvesters, cradling.	April 29, 1856.	I.
15315	Barnes, Charles E., assignor to C. E. Barnes and M. W. Oliver.	Cannon, automatic.	July 8, 1856.	XIX.
15508	Barnes, E. R., and Jas. B. Blakalee.	Hat-bodies, felting.	Aug. 12, 1856.	III.
15876	Barnes, J. W.	Manure distributor.	Oct. 14, 1856.	I.
15917	Barnes, John.	Threshing, grain, and separating machines.	Oct. 21, 1856.	I.
14046	Barnes, Lebbens.	Harvesters.	Jan. 8, 1856.	I.
15878	Barnes, W. T. and J.	Pump.	Oct. 14, 1856.	XI.
14325	Barnes, V.	Brake, R. R. car.	Mar. 11, 1856.	X.
14647	Barnhart, Andrew J.	Lasts, securing and releasing blocks of.	April 15, 1856.	XIV.
15407	Barnitz, C. D.	Tables, portable, folding.	July 29, 1856.	XVII.
14898	Barrett, Jonathan F., assignor to Abram B. and Jonathan R. Barrett.	Mowing machines.	May 13, 1856.	I.
15272	Barringer, Henry.	Tire, upsetting, machine for.	July 8, 1856.	X.
16043	Barstow, Ephraim R., and B. Wardwell. (See Wardwell & Barstow.)	Fancet, anti-frost.	Nov. 11, 1856.	XI.
14708	Bartholomew, Frederick H.	Fertilizers, sowing machine for.	April 22, 1856.	I.
15320	Bartle, Warren S., and Ebenezer Vaughan.	Straw-cutter.	July 15, 1856.	I.
14273	Bartlett, Hayward & Co. (See Smith, Brown & Read, assignors.)	Cisterns, construction of.	Mar. 26, 1856.	IX.
15321	Bartlett, William D.	Ploughs.	July 15, 1856.	I.
14583	Barton, Alvin, assignor to himself, A. R. Morgan, and J. M. Parsons.	Door-springs.	April 1, 1856.	II.
14593	Barton, Jason.	Bells, pressure.	April 8, 1856.	XVII.
15591	Barton, Wm. M., assignor to Wm. M. and Robert M. Barton.	Stone, drilling and dressing, machines for.	Aug. 19, 1856.	XV.

15595	Barton, Wm. M., assignor to Wm. M. and Robert M. Barton.	Drills, rock	Aug. 19, 1856.....	XV.
10877	Bartram, Walker B.	Pins in paper, sticking.....	Oct. 14, 1856.....	II.
14793	Bascom, A., and C. B. Wheeler. (See Wheeler & Bascom)			
	Bastion, Joseph.....	Wheels, turbine, guides or chutes for, construction of.....	May 6, 1856.....	XI.
15215	Batchelder, Hazin J.....	Forceps, dental	July 1, 1856.....	XX.
15965	Batchelder, Hazin J.....	Tooth extractor.....	Oct. 28, 1856.....	XX.
15055	Batchelder, William W.....	Pegging machines, hand	June 10, 1856.....	XVI.
15942	Bate, John J.....	Lard rendering kettles	Oct. 21, 1856.....	IV.
15755	Bate, Robert. (See Dickinson & Bate.)			
15409	Bates, Malender	Planters, corn.....	Sept. 23, 1856.....	I.
	Batson, John W., assignor to himself and Martin H. Bateon.	Harvesters, corn and cane, cutting apparatus for.....	July 29, 1856.....	I.
15408	Batson, John W., assignor to himself and Martin H. Bateon.	Harvesters, corn and cane, raking apparatus for.....	July 29, 1856.....	I.
14997	Batthey, Jesse	Windmills, method of regulating	June 3, 1856.....	XI.
14794	Baughman, J. T.....	Wagon tongue.....	May 6, 1856.....	X.
15943	Baum, Charles.....	Table and bedsteads combined.....	Oct. 21, 1856.....	XVII.
14221	Baxendale, James. (See Standing, John, assignor.)			
15056	Baxter, William	Wrench	Feb. 12, 1856.....	II.
15274	Baxter, William	Engine, hydro-steam	June 10, 1856.....	VI.
16323	Bazin, James A.....	Pumps, rotary.....	July 8, 1856.....	XI.
15164	Bazin, James A. (assignor to A. B. Ely)	Counting	Dec. 23, 1856.....	VIII.
16138	Beach, A. Ely	Printing instruments for the blind	June 24, 1856.....	XVIII.
16311	Beach, Moses S.....	Printing presses, feeding paper to.	Dec. 2, 1856.....	XVIII.
412	Beach, Moses S.....	Printing presses, feeding paper to, machine for.....	Dec. 23, 1856.....	XVIII.
16226	Beach, William.....	Currycombs	Dec. 9, 1856.....	Release.
15167	Beach, William.....	Pans, bake	Dec. 16, 1856.....	XVII.
14081	Beale, Fordyce	Firearms.....	June 24, 1856.....	XIX.
	Beattie, John.....	Propellers, stern, means for supporting the propeller shaft, and receiving the rudder of.....	Jan. 15, 1856.....	VI.
				XXII.
15032	Beaugrand, C. E. A., and Theodore Gomme. (See Gomme & Beaugrand.)			
14531	Beaumont, Frederick B. E.....	Firearms	June 3, 1856.....	XIX.
	Beck, Jacob M. (See Low, Samuel W., assignor.)	Trap, rat, self-setting	Mar. 25, 1856.....	XXII.
14998	Becker, Joseph	Pianoforte action.....	June 3, 1856.....	XVIII.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15324	Bee, Benjamin F.....	Boilers, steam, means for controlling feed-water apparatus of.	July 15, 1856.....	VI.
16171	Reebe, Alfred B.....	Valve gear for steam-engines.....	Dec. 9, 1856.....	VI.
14343	Beebe, James W.....	Hats, manufacturing.....	Mar. 4, 1856.....	III.
15610	Beecher, D. J.....	Planters, cotton-seed.....	Sept. 2, 1856.....	I.
15509	Beers, Smith.....	Odometers.....	Aug. 12, 1856.....	VIII.
783	Beesley, Jacob, assignor to Cresson, Stuart, & Peterson.	Furnace, summer.....	April 15, 1856.....	Design.
841	Beasley, J., and E. J. Delany, (assignors to Cresson, Stuart & Peterson.)	Stoves, parlor.....	Oct. 7, 1856.....	Design.
14903	Beetle, James.....	Boat-framer.....	May 29, 1856.....	VII.
14945	Beetle, James.....	Car-window.....	May 27, 1856.....	X.
15410	Behrens, Henry J.....	Stone, machines for sawing in taper form.....	July 29, 1856.....	XV.
15116	Belchambers, Alfred.....	Thrashing and winnowing grain.....	June 17, 1856.....	I.
15468	Belknap, Moody.....	Spike machines.....	Aug. 5, 1856.....	II.
14301	Bell, William.....	Cellars, coal in, machine for depositing.....	Feb. 26, 1856.....	IX.
	Bellamy, W., and C. Dickinson. (See Dickinson & Bellamy.)			
	Bellows, E. H., and G. J. Washburn. (See Washburn & Bellows)			
15918	Belt, Charles R.....	Planters, cotton-seed.....	Oct. 21, 1856.....	I.
15552	Belter, John H.....	Bedsteads.....	Aug. 19, 1856.....	XVII.
15322	Bemiss, Moses.....	Planters, corn.....	July 15, 1856.....	I.
	Bender, Charles, et al. (See Huygens, G. W. O., assignor)			
15097	Benedict, Keuben W.....	Carriages.....	June 10, 1856.....	X.
14595	Benham, Nathan.....	Door-knobs, fastening.....	April 8, 1856.....	II.
	Bennett, D. K., and Alonzo Webster (See Webster and Bennett.)			
16139	Bennett, Edwin.....	Vessels, earthen, for hermetical sealing purposes.....	Dec. 2, 1856.....	XV.
14530	Bennett, James H.....	Butter-worker.....	Mar. 25, 1856.....	I.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14796	Bishop, G. W.	Smoothing irons, self-heating.....	May 6, 1856.....	XVII.
15682	Bishop, G. W.	Ordnance, breech-loading.....	Sept. 9, 1856.....	XIX.
14707	Bissell, M. (See Mills, S. S., and M. Bissell.)	Seeding machines.....	April 23, 1856.....	I.
15920	Bitler, George I.	Corn-shellers.....	Oct. 21, 1856.....	I.
14438	Black, William.	Saddle-tree, dumb jockey, the cross or horns, &c., being made of gutta percha.	March 18, 1856.....	XVI.
14386	Blackwell, Samuel.	Blast, hot, apparatus.....	March 11, 1856.....	V.
14437	Blair, Lafayette.	Gas, roasting and broiling by, apparatus for.....	March 18, 1856.....	V.
820	Blake, James B.	Water-wheels.....	April 22, 1856.....	Extension.
16173	Blake, L. W. and G. W.	Drawer-pulls.....	Aug. 5, 1856.....	Design.
16173	Blake, P. and E. W. and J. A.	Boilers, steam, floats for.....	Dec. 9, 1856.....	VI.
15961	Blake, William S.	Kettle, brass, machine for making.....	Oct. 28, 1856.....	II.
14302	Blakeslee, E. C., E. Platt, and E. Jordan.	Pitman.....	Feb. 26, 1856.....	XIV.
15098	Blakeslee, Andrew, and Walter Clark.	Bottles, apparatus for cutting the strings that secure corks in.	June 10, 1856.....	XXII.
15395	Blakeslee, James B., and E. R. Barnes. (See Barnes & Blakeslee.)	Graters, nummeg.....	July 15, 1856.....	XVII.
15944	Blanchard, George.	Wood, bending, method of.....	Oct. 21, 1856.....	XIV.
15367	Blanchard, Thomas.	Door-knobs.....	July 22, 1856.....	II.
14483	Bliss, Jeremy W.	Guns, needle.....	March 25, 1856.....	XIX.
14710	Blitkowski, G. A., and F. W. Hoffman.	Firearms, revolving.....	April 22, 1856.....	XIX.
14710	Blitkowski, Gustav, administrator of Frederick William Hoffman.	Forks.....	Feb. 19, 1856.....	XVII.
14275	Blodgett, Sherburne C.	Sewing machine.....	Aug. 5, 1856.....	III.
15469	Blodgett, Sherburne C.	Boats, detaching from their tackle.....	March 25, 1856.....	VII.
14489	Blunt, S. F., deceased, Charles H. Key, adm'r of	Buff for polishing spoons, and other articles.....	Oct. 7, 1856.....	Reissue.
399	Boardman, Luther.	Planters, corn.....	May 6, 1856.....	I.
14801	Bocklen, Reinhold.	Horse-fastening.....	Dec. 23, 1856.....	XXII.
16312	Bogert, Horatio. (See Bradford, Hezekiah, ass't r.)	Sewing machine.....	Aug. 5, 1856.....	III.
16470	Bolton, James.			
16470	Bond, Joseph, Jr.			

16169	Bonney, H. M.	Sail hanks.	Dec. 9, 1856.	VII.
14344	Bonwill, William M.	Harvesters, corn.	March 4, 1856.	I.
15117	Bonzano, M. F.	Counting coin, machines for.	June 17, 1856.	VIII.
14502	Book, S. & W. H.	Felloes, machine for sawing.	May 6, 1856.	X.
	Bookout, Edward, and W. Filmer. (See Filmer & Bookout.)			
14902	Bookout, E., and C. H. Hewlett.	Closets, water.	May 20, 1856.	IX.
15326	Bone, Thomas G.	Rope machines.	July 15, 1856.	III.
15278	Booth, William M., and James H. Mills.	Dies for stamping or pressing sheet metal.	July 8, 1856.	II.
15553	Borden, Gail, jr.	Milk, concentration of.	Aug. 19, 1856.	IV.
15754	Boes, Isaac.	Sails, top, reefing.	Sept. 23, 1856.	VII.
	Boston Faucet Company. (See Goodridge, Joseph, assignor.)			
798	Boston Faucet Company. (See Goodridge, Joseph, assignor.)	Piano-forte legs.	May 27, 1856.	Design.
	Bosworth, Albert, assignor to Albert Bosworth and Timothy H. Loomis.	Stoves, heating, construction of.	March 31, 1856.	Extension.
375	Bosworth, Zephaniah.	Watches, securing pinions, &c., of, in lathes.	July 8, 1856.	Reissue.
15575	Bottom, James M.	Excavators.	Oct. 14, 1856.	I.
15216	Bourbin, James.	Sawing felloes, machine for.	July 1, 1856.	XIV.
15166	Bowen, David.	Hemp-breaker.	June 24, 1856.	III.
15402	Bowen, R. W.	Sewing machines, folding guides for.	July 22, 1856.	III.
	Boyce, Burritt C., assignor to B. C. Boyes and H. Dercum.			
	Boynton, Cox, & Richardson. (See Hathaway, David, assignor.)			
15279	Boynton, Edward S.	Hitching horses, clothes lines, &c., apparatus for.	July 8, 1856.	XXII.
15471	Boynton, John.	Brick press.	Aug. 5, 1856.	XV.
15338	Boynton, J. F.	Soda fountains.	Oct. 7, 1856.	IV.
15411	Boynton, John F.	Salt evaporation, solar apparatus for.	July 29, 1856.	IV.
15165	Boynton, Leander W.	Smoothing irons.	June 24, 1856.	XVII.
	Boynton, Richardson & Cox. (See Vedder, N. S., assignor.)			
	Boynton, Richardson & Cox. (See Vedder & Ripley, assignors.)			
	Boynton, Richardson & Cox. (See Hathaway, David, assignor.)			
15550	Brabyn, John L.	Furniture polish.	Aug. 19, 1856.	XVII.
15798	Brad, Henry.	Brick machines.	Sept. 30, 1856.	XV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15057	Bradford, Charles K.	Harness trace couplings.	June 10, 1856.	XVI.
15544	Bradford, Hezekiah, assignor to Horatio Bogert.	Ore washer.	Aug. 12, 1856.	II.
16044	Bradley, George.	Drag, steam.	Nov. 11, 1856.	X.
15960	Bradley, R. P.	Valve, puppet.	Oct. 25, 1856.	XI.
15543	Bradley, Robert P., assignor to Joel Wiener.	Clothes, wringing.	Aug. 12, 1856.	XVII.
14049	Brady, Reuben.	Metal, sheet, bending, machine for.	Jan. 8, 1856.	II.
15276	Braman, E., & R. Peterson	Back machines.	July 8, 1856.	XV.
14687	Bramble, W. H.	Weighing machines, grain.	April 15, 1856.	XII.
392	Brand, C. C.	Bomb-lance for killing whales.	Aug. 26, 1856.	Reissue.
15118	Brand, Nathan	Forks, hay machine for bending.	June 17, 1856.	II.
15966	Branch, Isaac B.	Teeth, applying freezing mixtures to the	Oct. 23, 1856.	XX.
14439	Branwhire, Charles	Cans, preserve, hermetically sealing.	Mar. 18, 1856.	XVII.
	Bray, Mellen. (See Wells, William, & Mellen Bray.)			
	Brayshaw, Wm. (See Melville, John G., & Wm. Brayshaw.)			
14797	Beaer, Abel.	Lubricator.	May 6, 1856.	IV.
14901	Brecht, Gustavus V.	Meat, cutting, machines for.	May 20, 1856.	XVII.
15590	Breckenridge, A. C., assignor to Julius Pratt & Co.	Bleaching ivory, frames for.	Aug. 19, 1856.	IV.
15217	Breed, D. Franklin.	Brake for wagons.	July 1, 1856.	X.
837	Bridge, Hudson E.	Stoves, cooking.	Oct. 7, 1856.	Design.
845	Bridge, Hudson E.	Stoves.	Oct. 14, 1856.	Design.
15921	Briggs, J. C.	Musical instruments, reed for.	Oct. 21, 1856.	XVIII.
15356	Briggs, John C.	Pen tulum for time-keepers, conical, made of regu- lating.	July 15, 1856.	VIII.
	Brinkerhoff, Alexander W. (See Perder & Brinkerhoff)			
14440	Broules, John.	Trusses, hernial.	Mar. 18, 1856.	XX.
15473	Brook, John M.	Boats, means for attaching and detaching to and from their tackle.	Aug. 5, 1856.	VII.

14698	Brooks, Lebbius.....	Marble obelisks, sawing, adjusting the angle in machines for.	April 15, 1856.....	XV.
15119	Brooks, Lebbius.....	Saw-ant.....	June 17, 1856.....	XIV.
14551	Brooks, Wm. F.....	Metal tubes, seamless, making.....	April 1, 1856.....	II.
350	Brosius, Jacob, and Jacob Geiss. (See Geiss & Brosius.)			
15059	Broughton, Albert.....	Polishing stone, metals, &c.....	Feb. 12, 1856.....	Reissue. XI.
15268	Broughton, John.....	Pumps, rotary.....	June 10, 1856.....	XIV.
15555	Broughton, John.....	Saws, circular, method of driving.....	July 22, 1856.....	II.
15728	Broughton, John.....	Door spring.....	Aug. 19, 1856.....	XIV.
397	Broughton, John.....	Shingle machines, feed motion for.....	Sept. 16, 1856.....	Reissue. XI.
15716	Brower, Robert F., assignor to S. A. & J. L. Brower.	Pumps, rotary.....	Sept. 30, 1856.....	
14490	Brown, Adolph & Felix.....	Gases, waste, steam, &c., method of drawing from manufacturing inclosures.	Sept. 9, 1856.....	
14787	Brown, Albert H., assignor to Tingley & Veile.....	Sugar, loaf, machines for cutting.....	Mar. 25, 1856.....	XXII.
14047	Brown, Charles E.....	Lathe.....	April 29, 1856.....	XIV.
14125	Brown, Charles H., and Charles Burleigh, assignors to the Putnam Machine Company.	Doors, double, mode of hauging.....	Jan. 8, 1856.....	IX.
349	Brown, Charles W.....	Valves, steam, as cut-offs, means for regulating and working.	Jan. 15, 1856.....	VI.
16225	Brown, Clark H.....	Tonguing and grooving machine.....	Feb. 5, 1856.....	Reissue. XIV.
14791	Brown, Clayton, sr.....	Hoops, wooden, method of planing and tapering.....	Dec. 16, 1856.....	IV.
	Brown, Edward, and James R. Case. (See Lib-long, John, assignor.)	Lubricating grist-mill spindles, apparatus for.....	May 6, 1856.....	
14223	Brown, F. & A.....	Boring and turning wood, machine for.....	Feb. 12, 1856.....	XIV.
15472	Brown, Henry and William.....			
14276	Brown, Henry A., and James Wiley.....	Boats, ice breaking.....	Aug. 5, 1856.....	VII.
	Brown, Henry, and Garretson Smith. (See Smith, G., and H. Brown.)	Pens, fountain.....	Feb. 19, 1856.....	XVIII.
	Brown, H., and G. Smith. (See Smith & Brown.)			
	Brown H., G. Smith, and Jos. A. Read. (See Smith, Brown, & Read.)			
	Brown, H., G. Smith, and J. A. Read. (See Smith, Brown, & Read.)			
	Brown, H., G. Smith, and J. A. Read. (See Smith, Brown, & Read.)			

Alphabetical List of Patentees—Continued.

No	Name of patentee.	Invention or discovery.	Date.	Class.
15277	Brown, H., G. Smith, and J. A. Read, assignors to Hayward, Bartlett, & Co. (See Smith, Brown, & Read, assignors.)	Vice.....	July 8, 1856.....	II.
15684	Brown, J. F.	Washing machine.....	Sept. 9, 1856.....	XVII.
14126	Brown, John L., assignor to himself and Charles Learned.	Lath machine.....	Jan. 15, 1856.....	XIV.
15475	Brown, J. S., assignor to Joseph Kent	Bee hives.....	July 29, 1856.....	I.
14552	Brown, John W.	Bolting railway bars.....	April 1, 1856.....	II.
14083	Brown, Joseph S.	Car, railroad, extension.....	Jan. 15, 1856.....	X.
14008	Brown, Philo.	Furnace for soldering.....	Jan. 1, 1856.....	V.
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith, assignors to Leibrant, McDowell, & Co. (See Smith, Brown, and Read.)			
16172	Brown, Robert J.	Fences, portable, yielding joint for.....	Dec. 9, 1856.....	IX.
14448	Brown, Samuel W.	Ships and other vessels, constructing the bottoms of.	Jan. 1, 1856.....	IX.
16058	Brown, Samuel W.	Steam-pressure gauges.....	June 10, 1856.....	VI.
16170	Brown, Timo.	Composition, alloy.....	Dec. 9, 1856.....	IV.
304	Brown, Thomas.	Chain cables, arrangement of means for working and stoppering.	Mar. 25, 1856.....	Reissue.
	Brown, Vernon, and John Taggart. (See Taggart, John, assignor.)			
14092	Brown, Wm. H.	Engines, variable dial for dividing.....	Jan. 15, 1856.....	VI.
	Browne & Hoffman. (See Hoffman, Sam'l, assignor.)			

14600	Brown, John D.	Apple, paring machines for	May	6, 1856	XVII.
14603	Brown, John D.	Apple parers	Sept.	9, 1856	XVII.
14726	Brownell, W.	Chimney cap	Sept.	16, 1856	V.
14734	Brownfield, Thomas	Wheels for carriages	Aug.	19, 1856	X.
851	Bruce, George	Printing types	Dec.	2, 1856	Design.
14799	Bruff, Charles S.	Shutters, double panel	May	6, 1856	IX.
14857	Bruff, Charles S.	Back supporter	Aug.	19, 1856	IX.
14909	Brunner, Henry I.	Paper, wall, machine for edging	Feb.	26, 1856	XVIII.
14964	Bryan, William W.	Snath of a grain-cradle, mode of securing braces in the	Dec.	23, 1856	I.
15556	Bryant, Joel	Gauges, carpenters'	Aug	19, 1856	XIV.
16204	Bryant, McLaren, & Anderson. (See Anderson, McLaren, & Bryant.)	Husking corn, machines for	Dec.	9, 1856	I.
14709	Buchanan, Alexander	Valve, balanced slide for steam engines	April	22, 1856	VI.
15551	Buchholtz, Lewis	Compound, plastic	Aug.	19, 1856	IV.
15833	Buck, Jacob, assignor to Jacob Buck, H. S. Buck, I. W. Kimball, and D. H. Thompson.	Cars, railroad, disconnecting and applying brakes	Sept.	30, 1856	X.
14947	Buck, Martin, Jas. H. Buck, & Francis A. Cushman	Brick machines	May	27, 1856	XV.
16174	Buck, M. and James H., and F. A. Cushman.	Brick, hollow, or building blocks, machines for pressing	Dec.	9, 1856	XV.
14597	Buckel, George, and E. Dorsch	Guns, shot	April	8, 1856	XIX.
15369	Buckel, George, and Edward Dorsch	Cartridges, fixed	July	22, 1856	XIX.
14706	Buch, Julio T.	Fishing tackle	April	22, 1856	XXII.
14277	Bull, Wallis and George	Marble, machines for sawing	Feb.	19, 1856	XV.
16179	Bullock, Alvin	Harvesters	Nov.	11, 1856	I.
15727	Bullock, W. M.	Felloes, dressing, machine for	Sept.	16, 1856	XIV.
	Bullock, S. W.	Presses for pressing hay, cotton, &c, method of constructing	Mar.	21, 1856	Extension.
14304	Bundy, Benj B.	Wagons	Feb.	26, 1856	X.
15060	Burdge, Jonathan	Mill, flour, cutting	June	10, 1856	XIII.
15316	Burditt, Riley, assignor to Jacob Estey and Hart- sel P. Green.	Melodeons, &c, base damper for	July	8, 1856	XVIII.
14999	Burdon, William	Valves, slide, relieving from the pressure of steam	June	3, 1856	VI.
16185	Burgess, Phineas	Glass, polishing, machines for	Nov.	18, 1856	XV.
14751	Burk, T. D., assignor to James Garrett	Wire fences, contraction and expansion in, device to allow for	April	22, 1856	II.
14750	Burk, Thomas D., assignor to J. C. Miller and C. A. Fowler.	Horse powers, link gearing for	April	22, 1856	XIII.

14850	Butler, W. H., and R. G. Holmes. (See Holmes & Butler.)	Cartridge opener.....	May 13, 1856.....	XIX.
14346	Butterfield, Jesse S., and Simeon Marshall.	Ploughs.....	Mar. 4, 1856.....	I.
14762	Cady, Asa W.	Excavating and moving earth, machine for.....	April 29, 1856.....	IX.
	Cabill, John H. (See Read, Jas. A., assignor.)			
	Caldwell, J. C., and Alex'r Hall. (See Alex'r Hall, assignor.)			
15327	Cambridge, P. C., jr.	Forms, ornamental, method of turning.....	July 15, 1856.....	XIV.
	Camp, M., and H. Bigelow. (See Bigelow & Camp.)			
16175	Campbell, James W.	Elliptographs.....	Dec. 9, 1856.....	VIII.
14649	Canfield, Henry E.	Valves, cut-off, of steam-engines, arrangement of means for operating.....	April 15, 1856.....	VI.
		Shot pouches.....	Jan. 29, 1856.....	XIX.
14151	Capewell, Joseph T.	Melodeons, reed boards for, machine for manufacturing.....	June 10, 1856.....	XVIII.
15061	Carhart, Jeremiah	Musical instruments, bellows for.....	June 24, 1856.....	Renoue.
372	Carhart, Jeremiah	Melodeons.....	July 1, 1856.....	XVIII.
15218	Carhart, Jeremiah	Saw mills, head blocks of, method of operating.....	June 10, 1856.....	XIV.
15062	Carlisle, John M.	Fences, field.....	Jan. 29, 1856.....	IX.
14152	Carlton, Thos. I., and Stephen Post.	Engines, steam, rotary.....	Sept. 2, 1856.....	VI.
15641	Carvichael, P. D. M.	Magneto-electric machines.....	April 8, 1856.....	VIII.
14598	Carpenter, Calvin, jr.	Rakes, hay.....	Aug. 26, 1856.....	I.
15601	Carpenter, Chas. P.	Harvesting-machines.....	Dec. 23, 1856.....	I.
16313	Carpenter, Joseph	Horse shoe.....	May 13, 1856.....	XI.
14552	Carpenter, Nelson B.	Pump, rotary.....	June 24, 1856.....	V.
15173	Carpenter, Stephen D.	Lamps, fluid, extinguisher for.....	Sept. 9, 1856.....	XXII.
15686	Carpenter, W. B.	Billiard table cushions.....	Oct. 23, 1856.....	
15994	Carpenter, Wm. B.			
	Carr, Adam (See McNab, Jas., and Adam Carr.)			
16045	Carr, Thomas.	Ships' steering apparatus.....	Nov. 11, 1856.....	VII.
15474	Carr, William S.	Water closets.....	Aug. 5, 1856.....	IX.
16220	Carson, Samuel, assignor to American Railway Manufacturing Company.	Locomotive method of charging the receiver of a, with compressed air, from fixed stations.	Dec. 16, 1856.....	VI.
		Odometers.....	Nov. 4, 1856.....	VIII.
16003	Carter, Albert.	Apple parers.....	Aug. 12, 1856.....	Renoue.
385	Carter, Charles P.	Apple parers.....	Aug. 26, 1856.....	XVIII.
15603	Carter, Charles P.	Apples, paring, machines for.....	Nov. 18, 1856.....	XVII.
16104	Carter, C. P., assignor to Leonard Harrington.	Marble sawing machine.....	July 15, 1856.....	XV.
15328	Carter, Ira			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14388	Carter, W. B., and H. L. Mooney. (See Mooney & Carter.)	Ore-washer	Mar. 11, 1856.....	II.
14183	Carter, Wm. L. Carlton, John. (See Stuber, John, assignor.) Caryl, A. H. Case, Jas. R., and Edward Brown. (See Liblong, John, assignor.)	Harvesters, raking attachment to.....	Feb. 5, 1856.....	I
16317	Case, John, and Isaac Soules	Furnaces, smoke consuming	Dec. 23, 1856.....	V.
15741	Casey, Abraham	Saw-set	Sept. 16, 1856.....	XIV.
15000	Casey, John	Window frames	June 3, 1856.....	IX.
14282	Case, Marcus M., and Lawson R. Bigelow	Grapple for raising stone	Feb 19, 1856.....	XII.
15657	Cawood, Joseph D.	Bars, railroad, repairing.....	Sept. 9, 1856.....	II.
15170	Chaffee, Horace B.	Vice	June 24, 1856.....	II.
14803	Chamberlin, Melvin C.	Collars, horse, mould press for	May 6, 1856.....	XVI.
16123	Chamberlin, M. C., and W. Filkins	Boot-legs, machine for turning	Nov. 25, 1856.....	XVI.
15542	Chambers, Cyrus, jr.	Paper, folding, machine for	Oct. 7, 1856.....	XVIII.
15599	Chambers, William C., and Thos. S. Hargraves	Wind-wheel	Aug. 26, 1856.....	XI.
16135	Chandler, Thomas A., assignor to H. Herrick and T. A. Chandler.	Planters, hand corn.....	Nov. 25, 1856.....	I
15219	Chapin, Henry A.	Gas-fi tings, reaming and tapping, machine for	July 1, 1856.....	V.
419	Chapin, Henry A.	Gas-fittings, machine for reaming and tapping	Dec. 23, 1856.....	Reissue.
14283	Chapin, Seth P.	Sewing guides	Feb 19, 1856.....	III.
14904	Chapman, Henry E.	Pill machines	May 20, 1856.....	XXII.
14184	Chapman, Levi	Photographic plate vice	Feb. 5, 1856.....	XVIII.
14009	Chapman, Nathan.	Press, power, chain for.....	Jan. 1, 1856.....	XII.
334	Chapman, Nathan.	Press, cotton	Jan. 8, 1856.....	Reissue.
14084	Chapman, Samuel I.	Printing presses, machine for feeding sheets of paper to.	Jan. 15, 1856.....	XVIII.
15645	Chase, Hezekiah.....	Chimneys, apparatus for arresting carbon in	Sept. 2, 1856.....	V.
14950	Chase, Ira, jr. Chase, North, and North. (See Vedder and Sanderson, assignors.)	Scuttle, coal, covers	Jan. 8, 1856.....	IX.

15870	Chase, North, and North. (See Gibbs, S. W.) Chase, North, and North. (See Gibbs, S. W., assignor.) Chase, North, and North. (See Vedder and Sanderson, assignors.) Chase, Pliny E.	Boilers, steam, arrangement of means for regulating the draught in.	Oct. 14, 1856.	VI.
15916	Chatfield, T. W.	Chimney cowl.	Oct. 14, 1856.	V.
15063	Chattaway, James.	Percussion caps, water proof.	June 10, 1856.	XIX.
15370	Chattaway, James.	Percussion tape priming.	July 22, 1856.	XIX.
14085	Cheever, Joseph.	Genital organs, apparatus for curing varicocele, sterility, impotency, and other diseases of the.	Jan. 15, 1856.	XX.
15642	Cheever, Joseph.	Belting or banding, India rubber, manufacture of.	Mar. 11, 1856.	XII.
15642	Cherry, Cummings.	Oil obtained from mineral coal, purifying apparatus for.	Sept. 2, 1856.	IV.
15643	Cherry, Cummings.	Oil, crude, distilling from mineral coal, apparatus for.	Sept. 2, 1856.	IV.
15644	Cherry, Cummings.	Oil, drying, preparation of from oils extracted from bituminous minerals.	Sept. 2, 1856.	IV.
15970	Chesley, Plumer Chester, Charles T. (See Robinson, Charles, and C. T. Chester.)	Wheel, current.	Oct. 28, 1856.	XI.
15840	Childs, George W.	Vegetable cutters.	Oct. 7, 1856.	XVII.
15938	Childs, William C.	Candle mould machine.	Oct. 24, 1856.	IV.
14443	Chope, Thomas.	Carriage coupling.	Mar. 18, 1856.	X.
14390	Church, Harvey. (See Dutcher, William R.)	Bench clamp.	Mar. 11, 1856.	XIV.
15220	Clapp, Clinton W.	Saws, wood, method of framing and straining.	July 1, 1856.	XIV.
14444	Clark, Hiram.	Threshing-machines.	Mar. 18, 1856.	I.
14086	Clark, H. M.	Bolts, heading, machines for.	Jan. 15, 1856.	II.
14224	Clark, John, and G. W. N. Yost.	Ploughs.	Feb. 12, 1856.	I.
14948	Clark, Walter. (See Blakie J. Clark.) Clark, W. A., George Trott, and R. H. Coles. (See Trott, Coles, and Clark.)	Piano legs, attachments for.	May 27, 1856.	XVIII.
15685	Clark, William.	Engines, steam.	Sept. 9, 1856.	VI.
14043	Clarke, G. A., assignor to Wm. Clarke.	Harvester, raking apparatus.	Jan. 1, 1856.	I.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Clam.
14051	Clarke, George H.	Bee-hives.	Jan. 8, 1856	I.
14804	Clarke, William	Paper from straw, process for making.	May 6, 1856	III.
14301	Clement, Edwin B., and Silas G. Willie.	Washing-machines.	Mar. 11, 1856	XVII.
14949	Clement, Nathan S.	Fire-arms, breech-loading.	May 27, 1856	XIX.
14950	Clemson, William	Saws, circular, grinding.	May 27, 1856	XIV.
15413	Cleveland, E. C.	Metal planers.	July 29, 1856	II.
15172	Cleveland, Samuel E. and H. B.	Lamps, locomotive.	June 24, 1855	V.
14347	Clifford, Ransom	Shingle-machine.	Mar. 4, 1856	XIV.
16112	Clinton, Thomas G.	Cooking apparatus, alcohol.	Nov. 25, 1856	V.
14853	Clough, John, and Daniel M. Cummings.	Splint, surgical.	May 13, 1856	XX.
15222	Clough, Wm. T.	Acid, sulphuric, concentrating apparatus for.	July 1, 1856	IV.
15122	Clow, Charles N.	Engines, marine and other, differential governors for.	June 17, 1856	VI.
15221	Clow, Charles N.	Pumps, rotary.	July 1, 1856	XI.
15280	Clow, Charles N.	Pumps, rotary.	July 8, 1856	XI.
14492	Coates, Abraham	Lamps, carcel, regulating the flow of oil to the wick in.	Mar. 25, 1856	V.
15720	Coates, John G.	Forceps, dentists.	Sept. 16, 1856	XX.
14855	Coates, William B.	Corn, green, from the cobs, machine for cutting.	May 13, 1856	XVII.
15475	Coates, William B.	Envelope.	Aug. 5, 1856	XVIII.
16177	Coates, William B.	Corn, standing, machine for cutting the stalks of.	Dec. 9, 1856	I.
	Cochran, John W. (See Bertram, William, as signor.)			
14010	Cochrane, James	Valves, slide, method of operating and lubricating.	Jan. 1, 1856	VI.
	Cody, J. A., et al. (See Marsh, David.)			
15646	Coffin, N. B., jr.	Filter.	Sept. 2, 1856	IX.
15282	Coffin, John E.	Books, rounding and backing, machine for.	July 8, 1856	XVIII.
14305	Coffin, Nathan T.	Saws, will.	Feb. 26, 1856	XIV.
737	Coggeshall, Wm. T.	Stoves, parlor.	Feb. 19, 1856	Design.
14650	Cohen, Jacob	Chimneys, grates and dampers for arrangement of.	April 15, 1856	V.
14906	Colburn, Richard, and L. W. Hanson	Valves, supplemental, arrangement of, for high-pressure engines.	May 20, 1856	VI.
15415	Cole, Algernon L.	Weaving seamless bags, harness for.	July 29, 1856	III.
14851	Cole, Charles N.	Gate, farm.	May 13, 1856	IX.

		Draining machines	Nov. 11, 1856.....	IX.
16046	Cole, John, and A. Little O. Wall			
	Cole, Mason D., and Harley Stone. (See Stone & Cole)			
	Cole, N. L. (See Allen, John F., assignor.)			
14011	Cole, Richard H	Nut box.....	Jan. 1, 1856.....	II.
15001	Cole, Richard H	Nut machine.....	June 3, 1856.....	II.
15003	Cole, Richard H	Nuts, making	June 3, 1856.....	II.
15004	Cole, R. H. & J. C.	Nuts, metallic, machine for polishing	June 3, 1856.....	II.
14711	Coleman, Andrew	Telegraph, receiving magnets for	April 22, 1856.....	VIII.
15729	Coleman, E. & P.	Bolt, heading	Sept. 16, 1856.....	II.
15868	Coleman, W. P.	Mill-stone dress	Oct. 7, 1856.....	XIII.
	Coles, R. H. George Trott, and William A. Clark. (See Trott, Coles & Clark.)			
14012	Collen, John B	Brick presses.....	Jan. 1, 1856.....	XV.
14088	Collier, E. H.	Spikes, heading	Jan. 15, 1856.....	II.
16257	Collier, Ralph	Egg beaters, rotary	Dec. 23, 1856.....	XVII.
15064	Collins, Hiram	Shutter operator	June 10, 1856.....	II.
15281	Colman, J. M., and T. Turton	Engines, steam, rotary	July 8, 1856.....	VI.
14905	Colt, Samuel	Fire arms	May 20, 1856.....	XIX.
	Colton, Howell, and La Baw. (See La Baw, George W., assignor.)			
14445	Comfort, Samuel, jr.	Mowing machines	Mar. 18, 1856.....	I.
14553	Comfort, Samuel, jr.	Harvesters, apparatus for removing grain from.....	April 1, 1856.....	I.
16307	Comfort, Samuel, jr., assignor to E. S. Renwick..	Harvesters, automatic rakes for.....	Dec. 23, 1856.....	I.
14153	Comstock, George R.	Furnace grates, locomotive	Jan. 29, 1856.....	V.
14554	Conant, Hezekiah.....	Fire arms, breech loading	April 1, 1856.....	XIX.
15168	Cone, Julius.....	Lock, alarm	June 24, 1856.....	II.
16229	Coney, Jabez.....	Pumps.....	Dec. 16, 1856.....	XI.
14052	Conkling, Edgar	Bricks, building, form of.....	Jan. 8, 1856.....	XV.
	Conner, L., and S. C. Mendenhall. (See Mendenhall & Conner.)			
10053	Contaret, D.	Disinfecting fecal matter.....	Jan. 8, 1856.....	IV.
15717	Cook, James C., assignor to Hotchkiss & Merriam Manufacturing Company.	Looms, Jacquard.....	Sept. 9, 1856.....	III.
14185	Cook, John.....	Shingles, cast-iron, lugs for	Feb. 5, 1856.....	IX.
	Cook, L. A., Bennet and Kendrick. (See Glines, H. M., assignor.)			
16268	Cook, Theodore	Stoves and furnaces	Dec. 23, 1856.....	V.
16047	Cooley, Almon.....	Door knob spindles, fastening.....	Nov. 11, 1856.....	II.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14013	Cooper, George E., & John C. F. Solomon. (See Salomon & Cooper.)	Ploughs	Jan. 1, 1856.....	I.
14907	Cooper, George W.	Printing machine.....	May 20, 1856.....	XVIII.
15414	Cooper, I. K., <i>et al.</i> (See Risher, Thomas A., assignor.)	Sawing machinery.....	July 29, 1856.....	XIV.
14225	Cooper, John H.	Valves and exhaust passages of steam engines	Feb. 12, 1856.....	VI.
16228	Copeland, A. S. T.	Bolt, spring.....	Dec. 16, 1856.....	II.
15800	Copeland, Charles W.	Locks.....	Sept. 30, 1856.....	II.
15969	Copeland, William E.	Jewelry, method of fastening	Oct. 28, 1856.....	XVIII.
14280	Coppertoll, G. W.	Forging thimbles.....	Feb. 19, 1856.....	II.
14279	Copinger, John B.	Metal, rolling.....	Feb. 19, 1856.....	II.
14493	Corlies, George H., and Elisha Harris.	Presses for punching.....	Mar. 25, 1856.....	XII.
15841	Corlies, George H., and Elisha Harris.	Mills, smut	Oct. 7, 1856.....	XIII.
15879	Cormack, Joel W.	Grain separators	Oct. 14, 1856.....	XIII.
15120	Cormack, Joel W., and F. C. Walker	Valves, safety.....	June 17, 1856.....	VI.
14348	Cornelius, R.	Heating of buildings, regulating the, arrangement of steam tubing for.	Mar. 4, 1856.....	V.
16176	Cornelius, Robert.	Burners, gas.....	Dec. 9, 1856.....	V.
14281	Cornell, Job, and Barrett McDougal.....	Vault covers.....	Feb. 10, 1856.....	IX.
14854	Cornell, John B.	Lathing surface, continuous sheet metal.....	May 13, 1856.....	IX.
14625	Cottman, Thomas, and C. Garrett. (See Garrett & Cottman.)	Envelopes, machine for making	April 8, 1856.....	XVIII.
15688	Cotton, Wm. W.	Fuel, artificial.....	Sept. 9, 1856.....	V.
15922	Courtney, Robert	Pumps	Oct. 21, 1856.....	XI.
14089	Covell, W. (See Turner, J., jr., assignor.)	Engines, fire, method of operating.....	Jan. 15, 1856.....	XI.
15558	Cowing, John P.	Fire, clamping and upsetting.....	Aug. 19, 1856.....	X.
14090	Cowling, John P., Philo and George.....	Hydrant.....	Jan. 15, 1856.....	XI.
14805	Cowles, O. L., and A. L. Dening.....	Hydrant.....	May 6, 1856.....	XI.
	Cowperthwaite, C. J.	Hydrant.....		

15169	Cox, Hager & Cox. (See Horton & Currie, assignors.)	Axles, mode of screwing shafts to.....	June 24, 1856.....	X.
14226	Cox, Hager & Cox. (See Smith, Brown, & Read, assignors.)	Vessels, signals for	Feb. 12, 1856.....	VII.
15317	Cox, John. (See Roberts & Cox.)	Dams, mode of constructing	July 8, 1856.....	IX.
	Cox, Richardson, & Boynton. (See Hathaway, David, assignor.)			
	Cox, Richardson, & Boynton. (See N. S. Vedder, assignor.)			
	Cox, Richardson, & Boynton. (See Vedder, N. S., and Ezra Ripley, assignors.)			
	Cox, Richardson, & Boynton. (See Hathaway, assignor.)			
	Cox, Warren, Morrison, & Co. (See Pierce & Duley, assignors.)			
	Cox, Warren, Morrison, & Co. (See Pierce & Burnam, assignors.)			
	Cox, Warren, Morison, & Co. (See Burnam, Sandford, assignor.)			
15169	Cox, William.....			
14226	Craig, W. P., and W. R. Rightor.....			
15317	Craig, Waldo P., assignor to W. P. Craig and W. R. Rightor.....			
15756	Craine, George	Shingles, feeding and sawing, method of	Sept. 23, 1856.....	XIV.
15602	Crandall, Enoch A	Measuring distances from a single station, instrument for.....	Aug. 26, 1856.....	VII.
14990	Crane, Chas. S. C., assignor to Sam'l W. Finkham.....	Corn-shellers	May 27, 1856.....	I.
14132	Crane, Thomas	Mills, flouring	Jan. 22, 1856.....	XIII.
14599	Crane, Thomas	Pumps, rotary	April 8, 1856.....	XI.
16114	Crane, William	Leather and morocco, polishing machines for.....	Nov. 25, 1856.....	XVI.
15005	Crangle, George	Brick-machines, rotary.....	June 3, 1856.....	XV.
151	Crangle, George	Brick-machines, rotary.....	Sept. 9, 1856.....	Add'l imp't.
154	Crangle, George	Brick-machines, rotary.....	Nov. 25, 1856.....	Add'l imp't.
15329	Crape, Marenus P.....	Brick, unburnt, machine for striking.....	July 15, 1856.....	XV.
	Crawford, S. (See Torrel, Charles C., assignor.)			
15283	Crawley, Edwin.....	Lettering, index, tool for.....	July 8, 1856.....	XVIII.
15223	Craytey, Alphonso.....	Pen, metallic	July 1, 1856.....	XVIII.
16004	Creamer, William G.....	Break, railroad car.....	Nov. 4, 1856.....	X.
14651	Creighton, J. B.	Stump extractor.....	April 15, 1856.....	IX.

14752	Currie & Horton. (See Horton, James, and John Currie.)	Augers.....	April 22, 1856.....	XIV.
15066	Curtis, Kelsey, assignor to Winsted Auger Co.....	Painted cloth, machine for rubbing and polishing.....	June 10, 1856.....	XVIII.
15065	Cushing, Daniel.....	Paint, machine for coating cloth with.....	June 10, 1856.....	XVIII.
	Cushman, Francis A., <i>et al.</i> (See Buck, Buck & Cushman.)			
15945	Dailey, Albert A.....	Washing machines.....	Oct. 21, 1856.....	XVII.
15476	Dailey, O. A. (See Scheidlin, J., assignor.)	Sash supporter.....	Aug. 5, 1856.....	IX.
15477	Dana, Charles H.....	Printing press.....	Aug. 5, 1856.....	XVIII.
14227	Danforth, William H.....	Mills, &c., feed gates for, method of regulating.....	Feb. 12, 1856.....	XIII.
15371	Dare, Clement.....	Engines, steam, vibratory.....	July 22, 1856.....	VI.
15224	Darker, William, jr.....	Apples, cutting and coring, machines for.....	July 1, 1856.....	XVII.
16049	Darling, Cook.....	Meter, diaphragm, fluid.....	Nov. 11, 1856.....	XI.
14382	Darlington, J. H. and W. Piper.....	Heating buildings by steam, apparatus for.....	Mar. 11, 1856.....	V.
16269	Davenport, Charles.....	India rubber thread, machines for cutting.....	Dec. 23, 1856.....	IX.
14393	Davenport, Henry.....	Sewing machines.....	Mar. 11, 1856.....	III.
14054	David, Henry R.....	Paving, street, machines.....	Jan. 8, 1856.....	IX.
14129	Davidson, Thomas, jr.....	Vapor, hydro-carbon, apparatus.....	Jan. 15, 1856.....	IV.
	Davis, Ari, Asabel Davis, and Charles Cunningham, assignors to A. W. Adams, J. B. Richardson, George W. Pettes, and S. T. Sanborn.			
14307	Davis, Ari and Asabel.....	Dovetailing machine.....	Feb. 26, 1856.....	XIV.
14494	Davis, Charles W.....	Dryers, fruit or grain.....	Mar. 25, 1856.....	V.
15036	Davis, D L.....	Railroad chairs, elastic bearings for.....	June 3, 1856.....	X.
16005	Davis, Edwin A.....	Railroad station indicator.....	Nov. 4, 1856.....	X.
	Davis, George N., <i>et al.</i> (See Kenney, George, assignor.)			
	Davis, George N., <i>et al.</i> (See Kenney, George, assignor.)			
14349	Davis, Isaac.....	Hinges for shutters.....	Mar. 4, 1856.....	II.
14806	Davis, Samuel.....	Lamps, lard.....	May 6, 1856.....	V.
15175	Davis, Wilbur M.....	Water wheel.....	June 24, 1856.....	XI.
14394	Davy, Edward, Nancy Davy, administratrix of.....	Hemp and flax, preparing, machinery for.....	Mar. 11, 1856.....	III.
856	Davy, John T.....	Stoves, cooking.....	Dec. 23, 1856.....	Design.
857	Davy, John T.....	Stoves, cooking, parlor.....	Dec. 23, 1856.....	Design.
855	Davy, John T.....	Grates, parlor.....	Dec. 23, 1856.....	Design.
16306	Dawley, B. G., assignor to Z. Allen.....	Looms.....	Dec. 23, 1856.....	III.
15330	Dawson, Joel.....	Sawing-mills, self-setting tail blocks for.....	July 15, 1856.....	XIV

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14763	Dawson, William.....	Cigar machines.....	April 29, 1856.....	XXII.
15067	Day, Austin G.....	India rubber, cleaning.....	June 10, 1856.....	IV.
15417	Day, Austin G.....	Pen fountain.....	July 29, 1856.....	XVIII.
14856	Day, Benjamin I.....	Bridle bits.....	May 13, 1856.....	XVI.
14807	Day, Charles. (See Grimes, Andrew.)	Wood, splitting, machine for.....	May 6, 1856.....	XIV.
14095	Day, Charles, and Alanson D. Lord.....	Fire-arms.....	Jan. 15, 1856.....	XIX.
14764	Day, T., and A. Bisbee. (See Bisbee & Day.)	Scaffolding.....	April 29, 1856.....	IX.
14154	Dearborn, John M.....	Bars, railroad, machine for replacing.....	Jan. 29, 1856.....	X.
14446	Degraw, H. N.....	Bottles, corking, machine for.....	Mar. 18, 1856.....	XXII.
782	Delany, Edward J., assignor to Cresson, Stuart & Petersen.	Oven, gas.....	April 15, 1856.....	Design.
14155	Delany, E. J., and J. Beesley, assignor to Cresson, Stuart, & Peterson. (See Beesley & Delany, assignors.)	Brick machine.....	Jan. 29, 1856.....	XV.
14637	Delassize, L. T.....	Moulding pipe, core bar for.....	April 8, 1856.....	II.
15284	Deming, A. L., and O. L. Cowles. (See Cowles and Deming.)	Smut-machines.....	July 8, 1856.....	XIII.
14228	Dempsey, R. M.....	Planer, rotary, for felloes.....	Feb. 12, 1856.....	XIV.
15478	Denig, John. (See Rode, Rufus, assignor.)	Carpet-fastener.....	Aug. 5, 1856.....	XVII.
15035	Denison, C. H.....	Planters, hand corn.....	June 3, 1856.....	I.
15604	Denison, S. R. C.....	Engines, steam, condensers for.....	Aug. 26, 1856.....	VI.
394	Denney, Samuel L.....	Saddles, harness.....	Sept. 9, 1856.....	Re-issue.
15285	Denniston, John T.....	Stave-joints.....	July 8, 1856.....	XIV.
16050	Derby, J. K.....	Sleeve-fastener.....	Nov. 11, 1856.....	XXI.
16140	Derby, John P.....	Wristband-fastener.....	Dec. 2, 1856.....	XXI.

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No.	Name of patentee.	Invention or discovery.	Date	Class.
15419	Downer, Samuel, and Joshua Merrill.....	Oils, lubricating, pyrogenous.....	July 29, 1856.....	IV.
14659	Downing, I. Francis.....	Gates, farm, method of hanging and elevating or de- pressing.....	April 15, 1856.....	IX.
15372	Drake, John S.....	Hands and arms, artificial.....	July 22, 1856.....	XX.
14859	Draper, S. W. and R. M.....	Mill-stones, machines for dressing.....	May 13, 1856.....	XIII.
15047	Driggs, John F.....	Street sprinkler.....	Sept. 2, 1856.....	IX.
15343	Dripps, Wm.....	Harvesters.....	Oct. 7, 1856.....	I.
15510	Drummond, John W.....	Steering apparatus.....	Aug. 12, 1856.....	VII.
	Drummond, Malenzo J. (See W. and W. H. Lewis, assignors.)			
	Dulley, J. J. (See Pierce and Dulley, assignors.)			
	Dulley, J. J., and Samuel Pierce, assignors. (See Pierce and Dulley, assignors to Fuller, Warren, and Morrison.)			
	Dulley, J. J., and Samuel Pierce, assignors. (See Pierce and Dulley, assignors to Fuller, Warren, and Morrison.)			
848	Dulley, James J., assignor to Fuller, Warren, and Morrison.	Stoves.....	Nov. 4, 1856.....	Design.
14351	Dunbar, Elon.....	Gates, farm, self-acting.....	Mar. 4, 1856.....	IX.
15176	Dunham, Isaac A.....	Shoemakers' edge planes.....	June 24, 1856.....	XVI.
14938	Dutcher, Wm. R., assignor by intermediate as- signment to Harvey Church.	Rope and cordage, machinery for making.....	May 20, 1856.....	III.
15914	Dutton, Thomas, assignor to I. R. Evans.....	Carriage springs, brace for.....	Oct. 14, 1856.....	X.
14395	Dwyer, Robert D.....	Carriages, apparatus for preventing horses in, from falling.....	Mar. 11, 1856.....	X.
796	Dyott, Michael B.....	Lamps.....	May 12, 1856.....	Disclaimer.
	Dyott, Michael B.....	Match safes, paper weights, and pin-cushions, com- bined.....	May 27, 1856.....	Design.
14908	Dyott, Michael B.....	Lamps for essential oils, &c.....	May 28, 1856.....	Extension.
373	Eagleton, J. Joseph.....	Furnace, annealing.....	May 20, 1856.....	V.
	Eagleton, J. Joseph.....	Furnace, annealing.....	June 24, 1856.....	Release.

14951	Fames, Charles T.	Boot-trees.....	May	27, 1856	XVI.
14187	Ebbert, Peter S.	Locomotives, heating feed-water of apparatus for.....	Feb.	5, 1856	VI.
15225	Ebbert, Peter S.	Locomotive smoke-stacks, base piece of.....	July	1, 1856	VI.
16006	Eberhard, Martin	Chairs, rocking.....	Nov.	4, 1856	XVII.
14445	Echols, Josephus	Stone-drilling machines.....	Mar.	25, 1856	XV.
15331	Echols, Samuel M.	Fire-backs for fire-places.....	July	15, 1856	V.
	Eddy G. W. (See Vedder & Sanderson, assignors.)				
	Edgerton, H., and G. W. Walton. (See Walton & Edgerton.)				
14308	Edson, Orbniel W.	Collars, shirt, machinery for making.....	Feb.	26, 1856	XXI.
15287	Edwards, Charles R.	Shutter operator.....	July	8, 1856	II.
15178	Ehrsam, George C.	Trees, felling, method of, by saws.....	June	24, 1856	XIV.
14396	Eickemeyer, R.	Rulers, parallel.....	Mar.	11, 1856	VIII.
15559	Eickemeyer, R.	Sawing-mills, method of operating velocity of feed for.....	Aug.	19, 1856	XIV.
15844	Eliason, Elias A.	Tan vats, construction of hide frames in.....	Oct.	7, 1856	XVI.
14556	Elliott, Augustus	Harvesters, grain.....	April	1, 1856	I.
15006	Ellis, Rufus	Knitting-machines, needle for.....	June	3, 1856	III.
15845	Ellis, Wm. M.	Buoys.....	Oct.	7, 1856	VII.
15479	Ellithorp, Solomon B.	Pavement metal.....	Aug.	5, 1856	IX.
	Ells, Edgar S., and Sidney W. Parker. (See Parker & Ella.)				
16178	Ellsworth, Erasmus W.	Siphon rams, arrangement of valves, &c., in.....	Dec.	9, 1856	XI.
16206	Ellsworth, Erasmus W.	Boilers, steam, feed water pumps for.....	Dec.	9, 1856	VI.
15332	Elvans, J. R. (See Dutton, Thomas, assignor.)	Door knobs.....	July	15, 1856	II.
15123	Elwell, Henry H.	Ships' capstans and windlasses.....	June	17, 1856	VII.
	Ely, A. B. (See Whipple, M. D., assignor.)				
	Emerson, Charles. (See Marquis & Emerson.)				
	Emerson, James				
	Emery, Charles W. (See Neal, James, and Chas. W. Emery.)				
369	Emlen, Samuel. (See Morgan, Chas., assignor.)	Hat bodies, planking-machines for.....	May	27, 1856	Release.
728	Emmons, Phineas, assignor to Albert Spencer and Alve E. Laing.	Piano-forte legs.....	May	13, 1856	Design.
15458	Engelbrecht, Theodore F., assignor to T. F. Engelbrecht and Thomas C. Nye.	Chimney dampers.....	July	29, 1856	V.
15758	English, B. E.	Window-blinds, the slats of, mode of adjusting.....	Sept.	23, 1856	IX.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15179	English, Francis M.	Vehicles, mode of detaching horses from.	June 24, 1856.	X.
14557	English, Henry	Hydrant.	April 1, 1856.	XI.
14229	Enos, Levi S.	Oil cans.	Feb. 12, 1856.	V.
14714	Erb, John B.	Locks, door.	April 22, 1856.	II.
15124	Erb, M., and F. C. Goffin	Locks.	June 17, 1856.	II.
14055	Erdle, Jacob	Saws, filing.	Jan. 8, 1856.	XIV.
14690	Ericason, John	Engines, air.	April 15, 1856.	XI.
14188	Ernst, John G.	Saw-set.	Feb. 5, 1856.	XIV.
15177	Espenchade, F.	Fluids, cooling and drawing from casks.	June 24, 1856.	XI.
15802	Espy, Mills B.	Bottles, hermetically sealing	Sept. 30, 1856.	XXII.
15880	Espy, M. B., and A. Walsh. (See Walsh, Henry, assignor.)			
141	Estep, D. P.	Axe-poles, making.	Oct. 14, 1856.	II.
14715	Esterly, George.	Harvesters, grass.	April 22, 1856.	Add'l Imp't.
155	Esterly, George.	Cultivators.	April 22, 1856.	I.
	Esterly, George.	Harvesting machines.	Nov. 25, 1856.	Add'l Imp't.
15002	Estey, Jacob, and Hartsel P. Green. (See Burditt, Riley, assignor.			
	Estlack, Thomas.	Buildings, device in the walls of, for preventing damage in case of fires.	June 3, 1856.	IX.
16115	Evans, Evan L.	Combs, curry.	Nov. 25, 1856.	II.
15037	Evans, James W.	Amalgamator.	June 3, 1856.	II.
16007	Evans, Ormrod C.	Spading machine.	Nov. 4, 1856.	I.
14640	Evans, R. M., assignor to R. M. Evans and Chas. S. Gale.	Brake, railroad car.	April 8, 1856.	X.
769	Evans, Theodore.	Forks and spoons, handles of.	Mar. 4, 1856.	Design.
16270	Evens, Platt, jr.	Printing press, hand.	Dec. 23, 1856.	XVIII.
14352	Everett, W. E.	Lubricator	Mar. 4, 1856.	IV.
14230	Everett, Wm. E., and M. Minthorne Thompson.	Boilers, incrustations of, devices for removing.	Feb. 12, 1856.	VI.
16270	Evins, John B.	Shingle machine	April 29, 1856.	XIV.
15511	Faas, Anthony.	Accordeons	Aug. 12, 1856.	XVIII.

15051	Fabney, Samuel, assignor to Abraham Huffer and Benjamin Fabney.	Vice.....	June 3, 1856.....	II.
15545	Fairbanks, Thaddeus, assignor to John C. Schooley.	Refrigerators.....	Aug. 12, 1856.....	XVII.
14056	Falkenaw, Morris, Morris Pollak, and Solomon Wiener.	Watch key.....	Jan. 8, 1856.....	XVIII.
14157	Farmer, Moses G.....	Telegraphic repeaters.....	Jan. 29, 1856.....	VIII.
15373	Farmer, Moses G..... Farmers' and Mechanics' Manufacturing Company. (See Ingersoll, Simon, assignor.)	Telegraphs, electric, self-acting.....	July 22, 1856.....	VIII.
15226	Farrand, W. P., and J. S. Sanson. (See Sanson & Farrand.)			
15125	Fay, Samuel B.....	Labels, metallic hook for.....	July 1, 1856.....	XXII.
15733	Fayette, J. B., and D. Wheeler.	Tackle-blocks, strapping.....	June 17, 1856.....	VII.
	Feix, John.....	Metals, granulating.....	Sept. 16, 1856.....	II.
	Felch, Isaac N., et al. (See Roberts, Milton, assignor.)			
	Felch, Isaac N., et al. (See Roberts, Milton, assignor.)			
14601	Felch, Dole, & Silver. (See Dole, B. A., assignor.)	Furnace, tempering.....	April 8, 1856.....	V.
15560	Fellowa, Robert B.....	Coupling pipes.....	Aug. 19, 1856.....	II.
347	Felters, George, and J. S. McClintock.....	Mills, grinding.....	Jan. 29, 1856.....	Release.
135	Felton, Amory.....	Mills, grinding.....	Feb. 26, 1856.....	Add'l imp't.
14015	Fenn, Benjamin.....	Wind-mill.....	Jan. 1, 1856.....	XI.
15881	Fenn, Dennis, E.....	Gates, farm, method of opening and closing.....	Oct. 14, 1856.....	IX.
15405	Fernald, James.....	Chairs.....	July 22, 1856.....	XVII.
	Ferry, Aretas, and D. W. Green. (See D. W. Green, assignor.)			
15246	Ferry, L. M., assignor to James T. Ames.....	Hose coupling.....	Oct. 7, 1856.....	XI.
15804	Fidler, John.....	Alloys, journal box.....	Sept. 30, 1856.....	IV.
14805	Field, A. G.....	Wind mill, self-regulating.....	May 6, 1856.....	XI.
15847	Field, Benjamin F.....	Mortar, mixing, machines for.....	Oct. 7, 1856.....	XV.
	Field, S. (See Kinsman & Field.)			
14309	Fiester, John U.....	Churns.....	Feb. 26, 1856.....	I.
15126	Fiester, John U..... Filkins, W. (See Chamberlin & Filkins.)	Carriage springs.....	June 17, 1856.....	X.
	Filley, G. F. (See N. S. Vedder, assignor.)			
16141	Filmer, William, and Edward Bookout.....	Electrotype plates, mode of backing.....	Dec. 2, 1856.....	XVIII.
16051	Flinkin, Gustavus.....	Sugar draining apparatus.....	Nov. 11, 1856.....	IV.

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No.	Name of Patentee.	Invention or discovery.	Date.	Class.
14191	Firth, Thomas.....	Boilers, steam, feed water, apparatus to.....	Feb. 5, 1856.....	VI.
15419	Fisher, Lewis S.....	Marble, sawing, machines for.....	July 29, 1856.....	XV.
14354	Fisher, Luther B.....	Shears, sheep.....	Mar. 4, 1856.....	IX.
14189	Fisher, Major H., assignor to Joseph A. Hyde.....	Files, cutting.....	Feb. 5, 1856.....	II.
	Fitch, Enoch P., and I. Scott. (See Kern, James M., assignor.)			
	Fitch, E. P., and Isaac Scott. (See Kern, James M., assignor.)			
14716	Fitta, Abraham.....	Peat, digging, machine for.....	April 22, 1856.....	IX.
14355	Fitzgerald, Daniel.....	Houses, portable.....	Mar. 4, 1856.....	IX.
14952	Fitzgerald.....	Houses, portable, mode of constructing.....	May 27, 1856.....	IX.
15099	Flagg, Charles E.....	Platform supporters.....	June 10, 1856.....	X.
16230	Flanders, Charles.....	Coupling, railroad car.....	Dec. 16, 1856.....	X.
14231	Flanders, David N.....	Carriage seat, adjustable.....	Feb. 12, 1856.....	X.
14602	Flanders, George W.....	Gates, flood.....	April 8, 1856.....	XI.
	Flanders, L. B. (See Lockwood, Asabel, assignor.)			
14497	Fletcher, Calvin.....	Paddle-wheels.....	Mar. 25, 1856.....	VII.
15227	Fletcher, Robert H.....	Pumps, steam, method of operating valves of.....	July 1, 1856.....	XI.
14603	Florey, Orlando V.....	Vice.....	April 8, 1856.....	II.
15288	Flowers, Francis J.....	Vehicles, mode of attaching shafts to.....	July 8, 1856.....	X.
16161	Floyd, Thomas, assignor to Thomas Floyd and George H. Merklin.	Vault covers.....	Dec. 2, 1856.....	IX.
14356	Foering, B. F.....	Stoves, furnaces, &c., supplementary grating for.....	Mar. 4, 1856.....	V.
14558	Folsom, George F.....	Printing press.....	April 1, 1856.....	XVIII.
15209	Foot, Alvah, assignor to himself, Ira Russell, A. B. R. Sprague, and Henry Phelps.	Bedsteads, spring-bottoms for.....	June 24, 1856.....	XVII.
139	Foot, George F.....	Cars, railroad, ventilating.....	April 8, 1856.....	Add'l'l im- provement.
16052	Foot, George F.....	Harvesting grain, machines for.....	Nov. 11, 1856.....	I.
16231	Forbes, John E.....	Skate-runners.....	Dec. 16, 1856.....	XXII.
14448	Forbush, Ellakim B.....	Harvesters, grain and grass.....	Mar. 18, 1856.....	I.
376	Forbush, Ellakim B.....	Harvesters, grain and grass.....	July 8, 1856.....	Release.

14557	Ford, F. R.	Rifle-boxes.....	Mar. 4, 1856.....	II.
15001	Fordyce, John.....	Planters, seed.....	Sept. 9, 1856.....	I.
14561	Forrester, Hugh.....	Harvesters, self-raking attachments to.....	May 13, 1856.....	I.
303	Forrester, L. N.	Saws, reciprocating, method of banging and straining.....	Sept. 10, 1856.....	Reissue.
15634	Fosket, William, and Benjamin S. Stedman, assignors to Julius Pratt & Co.	Comb-blanks, machine for sizing.....	Aug. 26, 1856.....	XXI.
15161	Foss, Charles M., and Albert L. Lincoln. (See Lincoln, Albert L., assignor.)	Fence, farm, for rolling ground.....	Aug. 19, 1856.....	IX.
15333	Foss, Ephraim D.	Straw-cutter.....	July 15, 1856.....	I.
15374	Foster, Ambrose and George M.	Building blocks from clay, &c., machine for.....	July 22, 1856.....	XV.
14156	Foster, Charles.....	Scaffolds.....	Jan. 29, 1856.....	IX.
15732	Foster, Joseph S.	Ships, sails, reefing, upon extra yards.....	Sept. 16, 1856.....	VII.
15480	Foster, Newton. (See Jones, John M., assignor.)	Railroad signals, compressed air, mechanism for.....	Aug. 5, 1856.....	X.
15903	Fowler, David H.	Boilers, steam.....	Sept. 30, 1856.....	VI.
14234	Fowler, Thaddeus.....	Pins, in paper, sticking.....	Feb. 12, 1856.....	II.
14604	Fox, A. W.	Planing felices, machine for.....	April 8, 1856.....	XIV.
14982	Fox, J. W.	Fluids, method of drawing from bottles.....	May 27, 1856.....	XI.
16232	Fox, George H., and Henry J. Siller.....	Faucet, filtering.....	Dec. 16, 1856.....	XI.
15210	Fravel, Abraham, assignor to himself and Thomas D. Lemon.	Drills, grain.....	June 24, 1856.....	I.
15923	Frear, A., J. Rowe, and W. Van Anden. (See Van Anden, assignor to Bushnell, assignor to others, &c., &c.)	Carriages.....	Oct. 21, 1856.....	X.
15228	Freeman, Daniel.....	Paper, pulp, making boxes of.....	July 1, 1856.....	XVIII.
15869	French, A., and C. Frost.....	Cars, railroad, coiled springs for.....	Oct. 7, 1856.....	X.
14190	French, A. J., and W. H. Kimball, assignors to themselves and A. H. Noyes. (See Kimball & French, assignors.)	Vehicles, three-wheel.....	Feb. 5, 1856.....	X.
14960	French, Elisha S.	Violins, bow for.....	May 13, 1856.....	XVIII.
14449	French, Samuel F.	Boilers, steam, feed and blow-off apparatus for.....	Mar. 18, 1856.....	VI.
15405	Frick, Jacob.....	Windmill.....	Nov. 6, 1856.....	XI.
15289	Frisbee, Marcus.....	Stone quarrying and cutting, machine for.....	July 8, 1856.....	XV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
143	Frost & French. (See A. French and C. Frost.) Frost, Henry A.....	Blinds, window, means for holding	May 6, 1856.....	Addit'nal im- provement. X.
15038	Frost, Mahlon S.....	Brakes, railroad car	June 3, 1856.....	X.
14862	Fuller, A. C.....	Hat-felting machines	May 13, 1856.....	III.
16164	Fuller, A. L.....	Thread, covering with wool	Dec. 2, 1856.....	III.
16271	Fuller, A. L.....	Looms	Dec. 23, 1856.....	III.
15759	Fuller, S. B..... Fuller, Warren & Morrison. (See Pierce & Dul- ley, assignors.) Fuller, Warren & Morrison. (See Pierce & Dul- ley, assignors.) Fuller, Warren & Morrison. (See Pierce & Dul- ley, assignors.)	Wheels, carriage, machine for painting.....	Sept. 23, 1856.....	X.
14559	Fuzzard, William	Hat bodies and other articles, cloth for felting.....	April 1, 1856.....	III.
15290	Fuzzard, William	Hat bodies, machinery for felting.....	July 8, 1856.....	III.
15735	Gage, William	Harvesters	Sept. 16, 1856.....	I.
14560	Gage, William B..... Gale, Charles S. (See Evans, R. M.)	Axles, railroad, journal box for.....	April 1, 1856.....	X.
14605	Gale, William S.....	Valves, piston, for steam-boiler regulators.....	April 8, 1856.....	VI.
15229	Gale, William S.....	Steam-pressure regulators.....	July 1, 1856.....	VI.
16273	Galentine, C. B. and Samuel, and Andrew J. Rus- sell.	Hoof expander.....	Dec. 23, 1856.....	II.
789	Gallagher, Anthony J.....	S'oves, cooking.....	May 13, 1856.....	Design.
14233	Gallagher, John S., jr..... Gallagher, John S., jr. (See Wood, Wm. P., as- signor.) Gallagher, John S., jr. (See Wood, Wm. P., as- signor to W. P. Wood and J. S. Gallagher, jr., and J. S. Gallagher, assignor to W. P. Wood.)	Gas and steam cooking apparatus	Feb. 12, 1856.....	V.
14498	Gallagher, John S., jr.....	Water coolers and filterers	Mar. 25, 1856.....	XVII.
16056	Gallagher, William D.....	Marble, sawing, machines for.....	Nov. 18, 1856.....	XV.

16053	Galludet, William L.....	Blinds, slat, spring holder for	Nov.	11, 1856.....	IX.
14606	Gamble, William F.....	Leather, polishing, machines for	April	8, 1856.....	XVI.
15606	Gane, Hervey D.....	Cultivator	Aug.	26, 1856.....	I.
14397	Garcia, Francois.....	Candles, making, preparation of tallow for	Mar.	11, 1856.....	IV.
14232	Gardner, P. G.....	Axle, railroad car	Feb.	12, 1856.....	X.
14909	Gardner, Bela	Saw-mill blocks, method of operating	May	20, 1856.....	XIV.
15695	Gardner, Charles R.....	Sewing-machines	Sept.	9, 1856.....	III.
15512	Gardner, Charles R.....	Dies for screw blanks	Aug.	12, 1856.....	II.
16272	Garlick, John T.....	Hinge, spring	Dec.	23, 1856.....	II.
14310	Garrett, Alfred C.....	Hubs, carriage, box for.....	Feb.	26, 1856.....	X.
15039	Garrett, Cyrus, and Thomas Cottman.....	Plows, subsoil.....	June	3, 1856.....	I.
14311	Garrett, James. (See Burk, T. D., assignor.)	Coupling for the joints of fellows	Feb.	26, 1856.....	X.
15806	Gattman, Isaac	Compound wherewith to manufacture paint.....	Sept.	30, 1856.....	IV.
14983	Gaty, Samuel.....	Ships' capatans	May	27, 1856.....	VII.
15972	Gausardia, I. Anthony	Preserving dead bodies, method of.....	Oct.	28, 1856.....	IV.
408	Gazlay, A. H., assignor to O. B. North & Co.....	Saddles, harness.....	Oct.	28, 1856.....	Reissue.
14235	Gebby, R. and W. L.....	Planters, seed.....	Feb.	12, 1856.....	I.
14236	Gee, William.....	Lubricator	Feb.	12, 1856.....	II.
16078	Geiss, Jacob, and Jacob Broscius	Vegetables, machines for cutting	Nov.	11, 1856.....	XVII.
351	George, A. M.....	Spike machines	Feb.	12, 1856.....	Reissue.
15335	George, A. M.....	Stone-dressing machine.....	July	15, 1856.....	XV.
15760	George, A. M.....	Shells, explosive.....	Sept.	23, 1856.....	XIX.
15318	George, Henry S., assignor to Henry S. George and George Gratton.....	Stoves, cooking	July	8, 1856.....	.....
14910	George, William O.....	Oracular wheel or centre table	May	20, 1856.....	XXII.
15839	George, William O.....	Cars, railroad, uncoupling arrangement for	Oct.	7, 1856.....	X.
14911	Gerau, Francis.....	Compounds, artificial, decoloring	May	20, 1856.....	IV.
14450	German, John, and C. B. Hoyt	Seeding machines.....	Feb.	12, 1856.....	I.
16008	Gerrish, Harlan P.....	Husking corn, machines for.....	Nov.	4, 1856.....	I.
15883	Giambastiani, Domenico	Ladders, firemen's.....	Oct.	14, 1856.....	XXII.
15608	Gibbs, George and John.....	Dynamometers.....	Aug.	26, 1856.....	VIII.
16234	Gibbs, James E. A.....	Sewing-machines	Dec.	16, 1856.....	III.
14057	Gibbs, L. H.....	Fire-arms, breech loading	Jan.	8, 1856.....	XIX.
852	Gibbs, Samuel W., assignor to A. H. McArthur & Co.....	Stoves, cooking	Dec.	9, 1856.....	Design.
853	Gibbs, Samuel W., assignor to G. W. Ball & Co.....	Stoves, cooking	Dec.	23, 1856.....	Design.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
808	Gibbs, Samuel W., assignor to North, Chase, & North.	Stoves	June 24, 1856.....	Design.
840	Gibbs, Samuel W., assignor to North, Chase, & North.	Stoves	Oct. 7, 1856.....	Design.
806	Gibbs, Samuel W., assignor to Treadwell, Perry, & Norton.	Stoves	June 17, 1856.....	Design.
770	Gibbs, Samuel W., assignor to W. & J. Treadwell, Perry, & Norton.	Stoves, elevated oven.....	Mar. 18, 1856.....	Design.
793	Gibbs, Samuel W., assignor to W. & J. Treadwell, Perry, & Norton.	Stoves	May 20, 1856.....	Design.
850	Gibbs, Samuel W., assignor to Wood, Roberts, & Co.	Stoves, kitchen.....	Nov. 25, 1856.....	Design.
14653	Gibson, A. J.....	Vehicles, attaching thills and poles to.....	April 15, 1856.....	X. Add'l imp't.
144	Gibson, Abram J	Carriages, coupling for.....	May 27, 1856.....	XXII.
15483	Giffing, Isaac H.....	Ice, breaking, instrument for.....	Aug. 5, 1856.....	XXII.
15848	Gilbert, George.....	Trap, fly	Oct. 7, 1856.....	XIV.
14499	Gilman, Jesse	Lath machine.....	Mar. 25, 1856.....	II.
15482	Gilman, Lorenzo D.....	Wrench	Aug. 5, 1856.....	IV.
15421	Gilman, Samuel H	Sugar evaporators.....	July 29, 1856.....	IV.
14717	Gilman, Samuel H	Sugar evaporators.....	April 22, 1856.....	V.
15481	Gilman, Samuel H	Furnaces, bagasse	Aug. 5, 1856.....	Reissue.
383	Gilman, Samuel H	Furnaces, bagasse	Aug. 5, 1856.....	IV.
15694	Gilman, Samuel H	Sugar, evaporating, pans for	Sept. 9, 1856.....	XIV.
15007	Gilpatrick, Benjamin	Saw-set	June 3, 1856.....	II.
14192	Glessinger, Samuel.....	Vice, bench.....	Feb. 5, 1856.....	XIII.
16303	Glessinger, Samuel, and John W. Kelberg, assignor to D. A. Morris.	Motion, rotary, converting reciprocating into.....	Dec. 23, 1856.....	XVII.
15946	Gleason, Edward.....	Casters, bottle	Oct. 21, 1856.....	XVII.
15127	Gleason, R., jr	Baskets, cake and fruit, silver plate	June 17, 1856.....	XVIII.
14451	Gleason, R., jr	Inkstand	Mar. 18, 1856.....	XVIII.

763	Glisson, R., jr., assignor to R. Glisson & Sons....	Bottle casters and egg-cup stands	Feb. 12, 1856.....	Design.
378	Glines, H. M., assignor to John M. and Simon F. Stanton, assignors to P. Bennet, J. Kendrick, and L. A. Cook.	Seine needles, machinery for filling	July 15, 1856.....	Reissue.
831	Glominaki, A., assignor to D., A. E., & N. B. Powers.	Floor cloths	Sept. 16, 1856.....	Design.
832	Glominaki, A., assignor to D., A. E., & N. B. Powers.	Floor cloths	Sept. 16, 1856.....	Design.
859	Glominaki, Antoine, assignor to D., A. E., & N. B. Powers.	Floor cloths	Dec. 23, 1856.....	Design.
15334	Glover, Carlos W.....	Harvesters, cutting device for.....	July 15, 1856.....	I.
15882	Glover, Charles W.....	Harvesters	Oct. 14, 1856.....	I.
14953	Goddard, Kingston.....	Axles, carriage, securing nuts to.....	May 27, 1856.....	X.
15607	Goddard, William.....	Hosiery, seamless, manufacturing.....	Aug. 26, 1856.....	III.
14954	Godfrey, Wm. B.....	Engine governor, for side-wheel ocean steamers.....	May 27, 1856.....	VI.
15337	Godman, Thomas J.....	Hogs, slaughtering, apparatus for.....	July 15, 1856.....	XXII.
15484	Goffe, Augustus J. and Demus.....	Knitting machines	Aug. 5, 1856.....	III.
14158	Giffin, F. C., and M. Erb. (See Erb & Giffin)	Heating buildings by steam, apparatus for	Jan. 29, 1856.....	V.
14312	Gold, Stephen J.....	Steam heating apparatus, air-cock for.....	Feb. 26, 1856.....	V.
14500	Gold, Stephen J.....	Steam radiator cocks	Mar. 25, 1856.....	VI.
15513	Gomme, Theo., and C. E. A. Beaugrand	Metal ware, sheet, manufacture of.....	Aug. 12, 1856.....	II.
15485	Gooch, J. H.....	Straw-cutters	Aug. 5, 1856.....	I.
16308	Goodell, A. W., and H. R. Howlett. (See Howlett H. R., assignor.)	Veneers, machine for cutting from the log.....	Dec. 23, 1856.....	XIV.
15849	Goodell, Joseph H.....	Scythes, attaching to snaths	Oct. 7, 1856.....	I.
15128	Goodrich, David A.....	Pitchers, molasses.....	June 17, 1856.....	XVII.
14865	Goodrich, Henry W.....	Winnowing mills.....	May 13, 1856.....	I.
15459	Goodrich, Horace N.....	Faucet.....	Aug. 1, 1856.....	XI.
15719	Goodridge, Joseph, assignor to Boston Faucet Company.	Faucet.....	Sept. 9, 1856.....	XI.
15720	Goodridge, Joseph, assignor to Boston Faucet Company.	Shingling bracket.....	Sept. 9, 1856.....	XIV.
16116	Goodsell, L. A., assignor to L. A. Goodsell and D. H. Holt.	Backgammon and checker boards.....	Nov. 25, 1856.....	XXII.
14626	Goodwin, Edwin Q.....	Pumps, method of regulating by wind wheels.....	April 8, 1856.....	XI.
148	Goodwin, Jacob W., and Moses C. Hawkins	Pumps, method of regulating by wind wheels.....	July 15, 1856.....	Add'l Imp't.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14336	Goodyear, John, jr., and Thomas I. Berry, assignors to John Goodyear, jr., Thomas I. Berry, and Wm. M. Porter.	Trap, roach.....	Feb. 26, 1856.....	XXII.
15761	Gordon, Alexander.....	Straw-cutters, feed-rolls of.....	Sept. 23, 1856.....	I.
14016	Gordon, George P.....	Printing-press.....	Jan. 1, 1856.....	XVIII.
366	Gordon, George P.....	Printing-presses.....	April 8, 1856.....	Release.
16146	Gore, Mastin, and John P.....	Drilling rock, machine.....	Dec. 2, 1856.....	XV.
14863	Gorham, Jackson.....	Saw, hand.....	May 13, 1856.....	XIV.
15070	Gorsuch, R. B.....	Pumps, double-acting steam, method of effecting uniform pressure upon the pumping piston of.....	June 10, 1856.....	XI.
14284	Gorauoh, Stephen.....	Seeding machines.....	Feb. 19, 1856.....	I.
838	Gott, John.....	Busta of J. C. Fremont.....	Oct. 7, 1856.....	Design.
15648	Gould, C H.....	Bedsteads.....	Sept. 2, 1856.....	XVII.
14608	Gould, Charles M., and Charles B. Lamb.....	Lanterns, submarine.....	April 8, 1856.....	V.
14864	Gould, J. H.....	Husk ng thimble.....	May 13, 1856.....	I.
15071	Gould, John H.....	Carriages, three-wheeled, for children.....	June 10, 1856.....	X.
14399	Gould, R.....	Tanning.....	Mar. 11, 1856.....	XVI.
15291	Goulding, John.....	Looms, Jacquard.....	July 8, 1856.....	III.
15734	Graham, E. H.....	Fire-arms.....	Sept. 16, 1856.....	XIX.
780	Granger, Albert.....	Pen, steel.....	April 15, 1856.....	Design.
15230	Grayson, John.....	Sawing stone, machine for.....	July 1, 1856.....	XV.
15693	Gratton, George, and Henry S. George. (See George, Henry S., assignor.)	Horse powers, links of.....	Sept. 9, 1856.....	XIII.
15692	Gray, A. W.....	Vehicles, mode of attaching horses to.....	Sept. 9, 1856.....	X.
16233	Gray, Edward A. (See White and Gray.)	Jack, lifting.....	Dec. 16, 1856.....	XII.
15008	Gray, George H.....	Hat bodies, machines for felting.....	June 3, 1856.....	III.
16305	Gray, Sylvester H.....	Hat bodies, sizing, machinery for.....	Dec. 23, 1856.....	III.
	Gray, S. H., assignor to Ives & Gray.....			

14842	Green, Denison W., assignor to himself and Aretas Ferry.	Soythe fastenings.....	May 6, 1856.....	I.
14766	Green, Edwin J., and Moses H. Wheeler..... Green, Hartsel P., and Jacob Estey. (See Burditt, Riley, assignor.)	Buggies, joint-bodied.....	April 29, 1856.....	X.
15009	Green, Jacob.....	Furnaces, gas consuming.....	June 3, 1856.....	V.
15101	Green, P. B., and E. A. Kennedy..... Green & Walter. (See Walter, William P., and Jacob Green.)	Planters, seed.....	June 10, 1856.....	I.
784	Green, William H.....	Casters.....	April 22, 1856.....	Design.
14534	Green, Samuel.....	Morocco, tools for figuring.....	Mar. 25, 1856.....	XVI.
14096	Greene, Allen.....	Axles, mode of attaching thills to.....	Jan. 15, 1856.....	X.
14358	Greenhalgh, J., sen.....	Looms, power.....	Mar. 4, 1856.....	III.
15807	Greenleaf, John.....	Leather, softening, machines for.....	Sept. 30, 1856.....	XVI.
14607	Greenleaf, William.....	Carriage coupling.....	April 8, 1856.....	X.
352	Greenough, J. J., assignor to J. M. Singer and Edward Clark.	Sewing or stitching straight seams, machines for.....	Feb. 12, 1856.....	Reissue.
	Gregory, Ira W. (See Watson, William C., assignor)			
	Grennell, Abel H. (See Houghton, Hiram L., assignor.)			
14654	Grennell, Abel H.....	Vines, mode of protecting.....	April 15, 1856.....	I.
14452	Griffiths, Robert.....	Nut machine.....	Mar. 18, 1856.....	II.
411	Griffiths, Robert.....	Nut machine.....	Nov. 25, 1856.....	Reissue.
16142	Griffiths, Robert.....	Nut machines.....	Dec. 2, 1856.....	II.
16304	Grimes, Andrew, assignor to Charles Day.....	Charcoal burning.....	Dec. 23, 1856.....	IV.
	Grimes, William C.....	Spark arresters.....	Jan. 23, 1856.....	Extension.
15100	Grierson, Amos L., and John Z. Williams.....	Potato diggers.....	June 10, 1856.....	I.
14561	Griswold, George G.....	Augers, method of manufacturing.....	April 1, 1856.....	II.
15762	Griswold, George W.....	Boots and shoes, heels of, metallic braces for.....	Sept. 23, 1856.....	XVI.
14691	Griswold, George W.....	Door spring.....	April 15, 1856.....	II.
15336	Griswold, Victor M.....	Photographic pictures, collodion for.....	July 15, 1856.....	XVIII.
15924	Griswold, V. M.....	Photographic pictures, bituminous ground for.....	Oct. 21, 1856.....	XVIII.
14017	Grooms, Benjamin.....	Fire-arms, repeating.....	Jan. 1, 1856.....	XIX.
14957	Gross, Henry.....	Saws, circular, guard for.....	May 27, 1856.....	XIV.
15072	Gross, Henry.....	Fire-arms, breech loading.....	June 10, 1856.....	XIX.
15763	Gross, Henry.....	Bed pins, manufacturing, device in machines for.....	Sept. 23, 1856.....	XIV.
16144	Grosvenor, Jonathan P.....	Planing machines, method of clamping cutters in cutter heads for.	Dec. 2, 1856.....	XIV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15358	Grover, Manasseh, and George W. Zeigler. (See Zeigler & Grover.)	Printer's composing stick.....	July 15, 1856.....	XVIII.
14956	Grover, Oliver F..... Grover, William O..... Grover, W., and William W. Wier. (See Wier & Grover.)	Sewing machines, cases for	May 27, 1856.....	III.
16009	Grover & Taggart, assignors. (See Taggart & Grover, assignors.)			
14337	Groves, Hiram	Musical instruments, automatic	Nov. 11, 1856.....	XVIII.
15319	Guest, John.....	Wheelwright machines.....	Feb 26, 1856.....	XIV.
382	Guild, William H., and William F. Garrison.....	Vessels, sounding guards for.....	July 8, 1856.....	VII.
14313	Guion, P. C	Valves, operating, in direct acting steam engines.....	July 29, 1856.....	Reissue.
14398	Guion, Peter C	Bridges, girders for.....	Feb. 26, 1856.....	IX.
16010	Guion, P. C	Spark conductors for locomotive trains	Mar. 11, 1856.....	V.
15636	Guion, Peter C., and Paul K. Wombaugh, assignors to Paul K. Wombaugh.	Cowl, or draught accelerator for steamers	Nov. 4, 1856.....	V.
14912	Gunner, John, jr.....	Lamps.....	Aug. 26, 1856.....	V.
	Gurley, Wm. & Kenney. (See Kenney, Cyrus, and Wm. Gurley.)	Shutters, fastening, swing-bolt for.....	May 20, 1856.....	II.
14809	Gustine, John, and J. M. Rankin.....			
14718	Haas, Christian, and John C. Noll.....	Scraper, road	May 6, 1856.....	IX.
14383	Haasz, Daniel F.....	Spokes, driving, machine for	April 22, 1856.....	XIV.
15764	Hackett, Charles W.....	Pianos, grand, construction of.....	Mar. 4, 1856.....	XVIII.
817	Hackett, Joseph	Stamp, hand	Sept. 23, 1856.....	XVIII.
	Hager, Cox & Cox. (See Smith, Brown & Read, assignors.)	Stoves, cooking	July 29, 1856.....	Design.
14812	Hagen, Conrad, and Ferdinand Wieterich. (See Wieterich & Hagen.)			
	Hager, Abraham, & Youngs Allyn.....			
	Hager, Cox & Cox. (See Horton & Currie.)	Furnaces, bagasse	May 6, 1856.....	V.

16179	Haght, James P., A. Hartupce, and J. Morrow. (See Konyon, Wm., assignor.)	Process for mashing grain	Dec. 2, 1856.....	I.
14719	Haigh, J. P., A. Hartupce, and John Morrow. (See Hartupce & Morrow, assignors.)	Annunciators, hotel.....	April 22, 1856.....	XXII.
15110	Hainaut, Elie Joseph	Fire arms, repeating	June 10, 1856.....	XIX.
16274	Haines, M. J., & B. Kuhns. (See Kuhns & Haines.)	Brick press, construction of the	Sept. 3, 1856.....	Extension.
14237	Hall, Alfred.....	Mowing machines.....	Dec. 23, 1856.....	I.
15231	Hall, Andrew M.....	Looms, power.....	Feb. 12, 1856.....	III.
15182	Hall, Elijah	Pitchers, refrigerating.....	July 1, 1856.....	XVII.
15292	Hall, Franklin D.....	Planters, seed.....	June 24, 1856.....	I.
14501	Hall, George	Fire-arms	July 8, 1856.....	XIX.
15293	Halsey, James E.....	Miniature case.....	Mar. 25, 1856.....	XVIII.
14955	Hammer, Adolph.....	Brick machine	July 8, 1856.....	XV.
137	Hamlin, Emmons, assignor to Hamlin and Henry Mason.	Musical instruments, reed	May 27, 1856.....	XVIII.
15696	Hammon, H. B.	Mash machines.....	Mar. 18, 1856.....	Addit'nal improvement.
14058	Hammond, Charles.....	Planters, hand, corn	Sept. 9, 1856.....	I.
16301	Hannah, W., assignor to L. H. Bowen and W. Hannah.	Hammer-heads to shafts, attaching.....	Jan. 8, 1856.....	II.
15486	Hannay, Peter.....	Bolts, trimming, machine for.....	Dec. 23, 1856.....	II.
344	Hanson, L. W., and Richard Colburn. (See Colburn & Hanson.)	Bank notes, bills, &c., blanks for.....	Aug. 5, 1856.....	XVIII.
15546	Hardinge, Benjamin	Silica, apparatus for dissolving	Jan. 22, 1856.....	Reissue.
16011	Hargraves, Thomas S., and W. C. Chambers. (See Chambers & Hargraves)	Brick machines.....	Aug. 12, 1856.....	XV.
14585	Harman, Isaac, assignor to Isaac Harman and William Bickel.	Brake, railroad car.....	Nov. 11, 1856.....	X.
	Harragan, Dennis	Carpet lining, machines for making.....	April 1, 1856.....	III.
	Harrington, John R.....			
	Harrington, L. (See Carter C. P., assignor.)			

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Harrington, L., and W. O. Thompson. (See Thompson & Harrington.)			
	Harris & Corliss. (See Corliss, George H., and Elisha Harris.)			
14193	Harris, Elisha.....	Hooks, ships', machine for bending	Feb. 5, 1856.....	II.
16054	Harris, Elisha. (See Corliss & Harris.)			
15649	Harris, Elisha. (See Corliss & Harris.)	Boilers, steam, water-gauges for.....	Nov. 11, 1856.....	VI.
14609	Harris, John C.....	Ploughs.....	Sept 2, 1856.....	I.
16276	Harris, Josephus P.....	Sifting coal and other articles, machine for.....	April 8, 1856.....	V.
14628	Harris, Samuel.....	Bedstead fastenings.....	Dec. 23, 1856.....	XVII.
14562	Harris, Sandy.....	Cocks, basin.....	April 8, 1856.....	XI.
14059	Harrison, Charles.....	Steam whistles, automatic, on locomotives.....	April 1, 1856.....	VI.
	Harrison, James.....	Locks, pad.....	Jan. 8, 1856.....	II.
	Harrison, James, jr.....			
	Harrison, Thomas. (See Oliver & Harrison.)			
15073	Hart, Benjamin J. (See Henry, Levi J, assignor.)			
	Hart, William.....	Watchmakers, tools for	June 10, 1856.....	XVIII.
	Hartupee, A., and Haigh & Morrow. (See Kenyon, William, assignor)			
15650	Hartupee, Andrew, and John Morrow, assignors to J P Haigh, A. Hartupee, and J. Morrow.	Engines, steam, adjustable cut-off for	Sept. 2, 1856.....	VI.
14655	Hartwell, Samuel E.....	Musquito-nets, frames for	April 15, 1856.....	XXII.
15232	Harvey, John L., and C. A. Mills.....	Paper-clip.....	July 1, 1856.....	XVIII.
14037	Harvey, W. W.....	Pruning trees, implements for.....	Jan. 15, 1856.....	I.
14535	Haseltine, John.....	Water wheels.....	Mar. 25, 1856.....	XI.
	Haswell, Livingston & Root. (See Carney, N B, assignor.)			
14238	Hatch, Anson.....	Press, hand, for stamping letters, &c.	Feb. 12, 1856.....	XVIII.
15736	Hatch, George W.....	Tanning, preparation of hides for.....	Sept. 16, 1856.....	XVI.
14638	Hatch, Royal, assignor to Henry C Hatch.....	Washboards.....	April 8, 1856.....	XVII.
14656	Hatch, William B.....	Saws, marble, straining	April 15, 1856.....	XV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14627	Heaton, John D.	Valves, arrangement of, for hydraulic engines.	April 8, 1856.	XI.
16277	Heckendorn, Jacob.	Plows	Dec. 23, 1856.	I.
15515	Heddaeus, Adolphus	Nail plate feeding apparatus	Aug. 12, 1856.	II.
15162	Hedgcock, Thomas	Quadrant, reflecting	June 17, 1856.	VII.
14914	Hedley, Edward	Shingle machine	May 20, 1856.	XIV.
16235	Heller, John	Water mill, portable	Dec. 16, 1856.	XI.
	Helm & Tyer. (See Tyer, Henry G., and John Helm.)			
14915	Henderson, John	Horse shoe	May 20, 1856.	II.
14611	Henderson, William M.	Valves, slide, and means for operating them, arrangement of.	April 8, 1856.	VI.
	Hendrick, Peckham, & Hopkins. (See Hopkins, Henry S., assignor.)			
14958	Hendrickson, Ezekiel M.	Lock and key	May 27, 1856.	II.
16056	Hengstenberg, August	Candle mould machine	Nov. 11, 1856.	IV.
15233	Hennon, John	Carriage, axle trees for, method of turning	July 1, 1856.	X.
16117	Henry, Geo. G.	Yarns, cotton, manufacturing	Nov. 25, 1856.	III.
15592	Henry, Levi J., assignor to Benjamin J. Hart	Musquito canopy	Aug. 19, 1856.	XVII.
15211	Henry, Remy, assignor to James Smith	Pumps, steam, method of operating steam valves of.	June 24, 1856.	XI.
15977	Herbert, G. E. W.	Water wheel	Oct. 28, 1856.	XI.
795	Herrick, Thos. H., assignor to Lemuel M. Leonard.	Stoves, cooking	May 20, 1856.	Design.
16180	Hervey, H. L.	Lamps, pocket	Dec. 9, 1856.	V.
14314	Hervey, Horace L.	Bridge, arched trussed	Feb. 26, 1856.	IX.
14453	Hervey, Horace L.	Harvester cutters	Mar. 18, 1856.	I.
15040	Hervey, Horace L.	Measuring distances, parallel instruments for	June 3, 1856.	VIII.
15236	Heuermann, John, and Jonathan Reeves.	Harvesters	July 1, 1856.	I.
	Hewlett, C. H. (See Rookhout & Hewlett.)			
14867	Hewson, James	Portmonnaies and pocket books, fastening for	May 13, 1856.	XVIII.
	Hibbard, B., and Wm. H. Burnham. (See Burnham & Hibbard.)			
15132	Hickok, Samuel.	Refrigerators	June 17, 1856.	XVII.
15237	Hicks, John C.	Raking attachment for reapers	July 1, 1856.	I.

14563	Higbee, Babbie, & Plantz. (See Babbie, Higbee, & Plantz.)	Slide rests.....	April 1, 1856.....	II.
14844	Hill, Albert V..... Hill, C. A., and V. O. Balcom. (See Balcom & Hill.)	Saw-mill dogs.....	May 6, 1856.....	XIV.
15808	Hill, George W., assignor to Francis Lyons and George W. Hill.	Brick machines.....	Sept. 30, 1856.....	XV.
14868	Hill, Joseph A.....	Railroad bars, lock-joint for.....	May 13, 1856.....	IX.
14659	Hilliard, James R.....	Cloth, stretching, spreading rollers for.....	April 15, 1856.....	III.
15976	Hilliard, Jonathan J.....	Forks, shovels, and hoes, agricultural, the handles of.....	Oct. 28, 1856.....	I.
14159	Hine, Reuben M.....	Shafts, &c., universal joint for connecting.....	Jan. 29, 1856.....	XII.
15180	Hinckley, Jonas.....	Grindstones, hanging.....	June 24, 1856.....	XIII.
14660	Hinman, David.....	Bedstead fastenings.....	April 15, 1856.....	XVII.
14454	Hinman, William.....	Mortising tool.....	Mar. 18, 1856.....	XIV.
14721	Hitchcock, A. C., and C. H. Amidon.....	Boilers, steam.....	April 22, 1856.....	VI.
14502	Hoard, C. B.....	Pile driver.....	Mar. 25, 1856.....	IX.
14913	Hock, John G.....	Gas retort fastenings.....	May 20, 1856.....	IV.
15010	Hock, John G.....	Gas retort bench, arrangement of a.....	June 3, 1856.....	IV.
	Hoe, Richard M.....	Metallic surfaces, particularly saw plates, machinery for polishing and grinding.....	May 26, 1856.....	Extension.
15501	Hoe, Richard M.....	Types, securing on rotary beds.....	Aug. 5, 1856.....	XVIII.
14267	Hoff, C. C., assignor to E. P. Russell..... Hoffman, Conrad (See Lindner & Hoffman) Hoffman, F. W. (See Blittkowiaki & Hoffman.) Hoffman, F. W. (See Blittkowiaki & Hoffman.) Hoffman, Frederick W.....	Roofing, mastic, construction of.....	Feb. 12, 1856.....	IX.
15516	Hoge, Thomas.....	Fire-arms.....	Aug. 12, 1856.....	XIX.
16181	Holden, Daniel. (See Priestly Thomas, assignor.) Hollingsworth & Kinyon. (See Kinyon & Hollingsworth.)	Fence for stock pen, portable prairie.....	Dec. 9, 1856.....	IX.
14239	Holly, Birdsall.....	Engines, condensing steam, which are used for pumping.....	Feb. 12, 1856.....	VI.
14870	Holman, William J..... Holmead, Leigh R. (See Phillips, John H., assignor.)	Railroads, compound rails for.....	May 13, 1856.....	IX.
14018	Holmes, Elijah.....	Spoke-shave.....	Jan. 1, 1856.....	XIV.
14753	Holmes, Geo. W., assignor to Jarvis C. Marble.....	Hoop machine.....	April 22, 1856.....	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14869	Holmes, I. B.	Wash-boards, machinery for manufacturing	May 13, 1856.	XVII.
14916	Holmes, I. B.	Metal, sheet, working in.	May 20, 1856.	II.
15517	Holmes, Ira.	Filtering sand for cider.	Aug. 12, 1856.	IV.
16087	Holmes, R. G., and W. H. Butler.	Safe, burglar proof.	Nov. 18, 1856.	II.
15074	Holmes, William.	Threshing machines	June 10, 1856.	I.
15238	Holmes, Lawrence.	Match machine.	July 8, 1856.	XXII.
	Holt, D. H., and L. A. Goodsell. (See Goodsell, L. A., assignor.)			
	Holyoke, Samuel G. (See Root, Riley.)			
14813	Hood, B. L., & E. P. Monroe.	Salt evaporators.	May 6, 1856.	IV.
14871	Hooker, W. D.	Knives to cutter heads, method of securing.	May 13, 1856.	XIV.
	Hooper, H. N., & Co. (See Kershaw, E., assignor.)			
14767	Hopkins, Edward.	Planters, hand-seed.	April 29, 1856.	I.
14545	Hopkins, Henry S., assignor to Hopkins, Hendrick & Peckham.	Engines, steam, means for regulating cut-offs for.	Mar. 25, 1856.	VI.
15975	Hopkins, J. R.	Salts, evaporators for	Oct. 28, 1856.	IV.
15375	Hopkins, Lansing E.	Hat bodies, machines for felting.	July 22, 1856.	III.
15563	Hopkins, Lansing E.	Compounds, felting	Aug. 19, 1856.	III.
15562	Hopkins, William W.	Knife cleaners.	Aug. 19, 1856.	XVII.
14240	Horn, J. L.	Planters, cotton seed	Feb. 12, 1856.	I.
14722	Horsford, E. N.	Acid phosphoric, preparing, as a substitute for other solid acids.	April 22, 1856.	IV.
16088	Horton, Chase B.	Grain, cleaning, machines for.	Nov. 18, 1856.	XIII.
16014	Horton, Elmore.	Fishing implement.	Nov. 4, 1856.	XXII.
797	Horton, James, and John Currie, assignors to Cox, Hager & Cox.	Ranges, portable	May 27, 1856.	Design.
15295	Hortmann, Wm. J.	Looms	July 8, 1856.	III.
15294	Hotchkiss, A. A., and Andrew Hotchkiss & Merriman, Manufacturing Co. (See James C. Cook, assignor.)	Currycombs	July 8, 1856.	XXII.
15199	Houck, Valentine	Planing machines, certain devices in	June 17, 1856.	XIV.

14177	Houghton, F. A., and A. F. Johnson. (See Johnson, A. F., assignor.)	Marble, mouldings on, machines for cutting.....	Jan. 29, 1856.....	XV.
15131	Houghton, Henry S.....	Traveller, brushes for cleaning	June 17, 1856.....	III.
15564	Houseworth, Abraham	Paddle-wheel	Aug 19, 1856.....	VII.
14661	Hovey, Wm. H.....	Harvesters, grain and grass.....	April 15, 1856.....	I.
14693	Hovey, Wm. H.....	Harvester, raking attachments.....	April 15, 1856.....	I.
14768	Hovey, Wm. H.....	Harvester, cutter-blades, attaching, to the sickle bar.....	April 29, 1856.....	I.
15973	Howard, B. (See Smith, L. S., assignor.)	Gas generator.....	Oct. 28, 1856.....	IV.
16275	Howard, Charles A.....	Clothing, card, trimming	Dec. 23, 1856.....	III.
15609	Howe, Elias, jr	Bedstead	Aug. 26, 1856.....	XVII.
15111	Howe, John J., and Truman Piper, assignors to Howe Manufacturing Company.	Pins, jappanning	June 10, 1856.....	II.
15112	Howe, John J., and Truman Piper, assignors to Howe Manufacturing Company.	Pins, machine for sticking	June 10, 1856.....	II.
15947	Howe Manufacturing Company. (See John J. Howe and Truman Piper, assignors.)	India rubber hose, modes of making.....	Oct. 21, 1856.....	IV.
15940	Howe Manufacturing Company. (See John J. Howe and Truman Piper, assignors.)	Saws, filing and setting.....	Oct. 21, 1856.....	XIV.
15654	Howell, Colton, and La Baw. (See La Baw, George W., assignor.)	Ploughs	Sept. 2, 1856.....	I.
15423	Howell, M. H. (See Ingalls, Joshua K., assignor.)	Stave machinery, certain improved devices in.....	July 29, 1856.....	XIV.
14959	Howland & Marsh. (See Marsh, Philo, assignor)	Boilers, steam floats for.....	May 27, 1856.....	VI.
16182	Howlett, H. R., assignor to himself and A. W. Goodell.	Boilers, steam, water gauges for.....	Dec. 9, 1856.....	VI.
14723	Hoyt, Benaiah C.....	Sails, top-yards, suspending extra.....	April 22, 1856.....	VII.
15234	Hoyt, Charles	Carriage-springs, mode of adjusting.....	July 1, 1856.....	X.
15655	Hoyt, F. A.....	Reapers, raking attachment for	Sept. 2, 1856.....	I.
	Hoyt & German. (See German, John, and C. B. Hoyt)			
	Hubbard, George			
	Hubbard, M. G			
	Hubbard, M. G			

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15985	Hubbard, M. G.	Wagons, side spar, arrangement of springs for	Oct. 14, 1856	X.
16193	Hubbard, M. G.	Reaping-machines, teeth for	Dec. 9, 1856	I.
15838	Hubbard, Moses G.	Mowing and reaping-machines, frames of	July 15, 1856	I.
16057	Hubbard, Moses G.	Harvesters, grain and grass, cutting apparatus of	Nov. 11, 1856	I.
16118	Hubbard, Wm. W.	Metal, lathes for planing	Nov. 11, 1856	II.
14133	Hubbell, Wm. W.	Shells, explosive, eccentric	Jan. 22, 1856	XIX.
14503	Hubbell, Wm. W.	Shells, explosive	Mar. 25, 1856	XIX.
15075	Hubbell, Wm. W.	Shot and shell, sabot for rotating	June 10, 1856	XIX.
15565	Hubbs, Isaac G.	Adding numbers, machines for	Aug. 19, 1856	VIII.
15235	Huddleston, Silas	Bedsteads	July 1, 1856	XVII.
14754	Huffer & Fahrney. (See Fahrney, Samuel, assignor)	Shovel and tongs combined	April 22, 1856	V.
14917	Huffman, Samuel, assignor to Samuel Huffman and J. D. Browne.	Telegraphs	May 20, 1856	VIII.
14195	Hughes, David E.	Brick presses	Feb. 5, 1856	XV.
337	Hughes, Harvey J.	Plows	Jan. 1, 1856	Reissue.
14612	Hulbert, Samuel	Whip handles, machine for tapering whalebone for	April 8, 1856	XXII.
15376	Hull, L.	Gas stop cock	July 22, 1856	IV.
15881	Hull, T. and S. (See Sandford, G. and T., and S. Hull.)	Salt evaporators	Oct. 14, 1856	IV.
14098	Humphrey, James	Presses, cotton	Jan. 15, 1856	XII.
14613	Hunt, Caleb S.	Mortar, machines for mixing lime and sand for	April 8, 1856	XV.
16236	Hunt, Henry W., and John Sands.	Fence, field, portable	Dec. 16, 1856	IX.
14547	Hunt, James G.	Horse power.	Mar. 25, 1856	XIII.
14019	Hunt, Richard	Collars, shirt	Jan. 1, 1856	XXI.
15656	Hunt, Walter	Axes, machine for testing	Sept. 2, 1856	II.
15518	Hunt, Warren	Gates, farm, method of raising, lowering, and operating.	Aug. 12, 1856	IX.
15377	Hunter, C., and N. Isham	Harvesters	July 22, 1856	I.
16145	Hunter, Stephen R.	Raking apparatus for harvesters	Dec. 2, 1856	.

16076	Huntress, William	Bedsteads	June 10, 1856	XVII.
14455	Hurlbut, Daniel N.	Planing knives, rotary, arrangement of	Mar. 18, 1856	XIV.
14241	Hurlbut, Westel W.	Saws, circular, method of hanging and adjusting	Feb. 12, 1856	XIV.
15130	Hutton, George	Saws, circular, method of adjusting obliquely to their arbors.	June 17, 1856	XIV.
14384	Hutton, Pelatiah M.	Pavement, cast iron, mode of constructing	Mar. 4, 1856	IX.
14584	Huygens, Geo. W. O., assignor to himself, Charles Bender, and D. F. Tiedeman.	Bridges	April 1, 1856	IX.
16058	Hyatt, G. W.	Forks for handling heated plates	Nov. 11, 1856	XVII.
15378	Hyde, Joseph A. (See Fisher, Maj. H., assignor.)	Traps, fly	July 22, 1856	XXII.
15183	Hyster, Joseph	Plotting instruments	June 24, 1856	VIII.
15424	Hliff, Charles R.	Boiler, steam, furnaces	July 29, 1856	VI.
14456	Ingalls, E. T.	Grating, illuminating	Mar. 18, 1856	IX.
15113	Ingalls, Joshua K.	Metal beams	June 10, 1856	II.
14663	Ingalls, Joshua K., assignor to M. H. Howell.	Presses, hay and cotton	April 15, 1856	XII.
15913	Ingersoll, Simon	Trees, felling, method of	Oct. 14, 1856	XIV.
15978	Ingersoll, Simon, assignor to Farmers' and Mechanics' Manufacturing Company.	Smut machines	Oct. 28, 1856	XIII.
15239	Ingham, Harvey B.	Locks	July 1, 1856	II.
15425	Isham, Henry	Rifle shot, mode of patching	July 29, 1856	XIX.
	Isham, N., and C. Hunter. (See Hunter & Isham.)			
	Isham, R. H.			
	Ivens, E. M., and L. H. Allen, assignees. (See Allen, L. H., assignor.)			
	Ives & Gray. (See Gray, S. H., assignor.)			
15077	Ives, James	Saddle trees, mode of attaching pads to	June 10, 1856	XVI.
16059	Ives, Wm. A.	Lock, spring latch and	Nov. 18, 1856	II.
14242	Jackman, S. S.	Puddlers' balls, elevators for	Feb. 12, 1856	II.
16238	Jackson, Peter H.	Ships' windlass	Dec. 16, 1856	VII.
14704	James, Benjamin, assignor to Roswell E. James.	Awl haft	April 15, 1856	II.
14315	James, Charles T.	Projectiles	Feb. 26, 1856	XIX.
14872	James, Daniel S.	Chairs, invalid	May 13, 1856	XVII.
15426	Jameson & Willard. (See Willard, Geo., assignor.)	Planters, corn	July 29, 1856	I.
	Jeffers, James D., Joseph Sparks, and John M. Jeffers.			
15948	Jenkins, J. V.	Shearing sheep	Oct. 21, 1856	I.
14359	Jenks, George C.	Coal holes, guards for	Mar. 4, 1856	IX.
14061	Jenks, George L.	Weavers' harness, machinery for making	Jan. 8, 1856	III.
15184	Jenks, Gustavus A.	Wrenches for gas-pipe, &c.	June 24, 1856	II.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14504	Jenks, William.....	Planters, hand, corn.....	March 25, 1856.....	I.
16237	Jennings, Lewis.....	Sewing machines.....	Dec. 16, 1856.....	III.
15567	Jewett, Frederick A.....	Carrriages, thorough braces for.....	Aug. 19, 1856.....	X.
16120	Johnson, A. F.....	Sewing machines, stitches for.....	Nov. 25, 1856.....	III.
15635	Johnson, A. F., assignor to himself and F. A. Houghton.....	Sewing machines.....	Aug. 26, 1856.....	III.
16315	Johnson, A. F., and F. A. Houghton.....	Sewing machines.....	Dec. 23, 1856.....	III.
14360	Johnson, Charles H.....	Heating buildings by the combination of and burning gas, air, and steam, apparatus for.....	March 4, 1856.....	V.
133	Johnson, Charles H.....	Gas-burner.....	March 18, 1856.....	Add'l imp't.
15696	Johnson, Danforth.....	Car-spring, metallic.....	Sept. 9, 1856.....	X.
14099	Johnson, Frank G.....	Wind-wheels, speed of, method of regulating.....	Jan. 15, 1856.....	XI.
14255	Johnson, John.....	Looms, power.....	Feb. 19, 1856.....	III.
	Johnson, John, and C. Tompkins. (See Tompkins & Johnson.)			
14662	Johnson, Joseph.....	Hats, manufacture of.....	Jan. 8, 1856.....	III.
760	Johnson, L.....	Printing-type.....	Feb. 12, 1856.....	Design.
14918	Johnson, Morgan S.....	Windmills, method of regulating.....	May 20, 1856.....	XI.
14815	Johnson, Moses A.....	Yarns, felted, manufacturing.....	May 6, 1856.....	III.
14020	Johnson, Waterman B.....	Boots and shoes, pegging, machines for.....	Jan. 1, 1856.....	XVI.
16206	Johnson, W. H.....	Cement, incorporating bituminous liquids with wet earths for a.....	Dec. 9, 1856.....	IV.
355	Johnson, William H.....	Sewing-machines.....	Feb. 26, 1856.....	Reissue.
15765	Johnson, J. I.....	Corn-shellers.....	Sept. 23, 1856.....	I.
14724	Johnston, Jas. J.....	Moulding, flasks for.....	April 22, 1856.....	II.
14505	Jones, Chas.....	Sifters, ash.....	March 25, 1856.....	V.
16163	Jones, Edwin.....	Planing, Bramah, machine.....	Dec. 2, 1856.....	XIV.
15610	Jones, J. Herba.....	Planters, hand seed.....	Aug. 26, 1856.....	I.
14662	Jones, John.....	Candle cutting apparatus.....	April 15, 1856.....	IV.
14919	Jones, John M.....	Printing machine.....	May 20, 1856.....	XVIII.
14134	Jones, John M., assignor to Newton Foster.....	Planters, cotton seed.....	Jan. 22, 1856.....	I.
14100	Jones, R. W.....	Brick machines.....	Jan. 15, 1856.....	XV.

14060	Jones, Samuel R. Jordan, E., E. C. Blakeslee, and E. Platt. (See Blakeslee, Platt & Jordan) Jordan, J. H., and J. M. Merryman. (See Merryman, John M., assignor.) Jordan, Wm. A. Jordan, William A. Joslyn, Edward.	Boots and shoes, peg-cutters for.....	Jan. 8, 1856.....	XVI.
15487	Joslyn, B. F.	Boats, line-ferry, or flying bridges, means for guiding.	Aug. 5, 1856.....	VII.
15766	Jordan, William A.	Brick machines.....	Sept. 23, 1856.....	XV.
14564	Joslyn, Edward.	Mortising machine.....	April 1, 1856.....	XIV.
15240	Joslyn, B. F.	Fire-arms, breech-loading.....	July 1, 1856.....	XIX.
16090	Jouan, A.	Vessels, lee-boards for.....	Nov. 18, 1856.....	VII.
16091	Jouan, A.	Propeller-shafts.....	Nov. 18, 1856.....	VII.
15850	Jouan, Auguste.	Vessels, steam, arrangement of elastic plate paddles for.	Oct. 7, 1856.....	VII.
15488	Joyce, Jacob O. (See McPherson, John L., and J. O. Joyce.)	Mills, corn and cob.....	Aug. 5, 1856.....	XIII.
15102	Joyce, Jacob O.	Excavator, rotary.....	June 10, 1856.....	IX.
15697	Juengst, George.	Gear, reversing.....	Sept. 9, 1856.....	XIII.
16121	Julier, Edward.	Spokes, machine to aid in making, by hand.....	Nov. 25, 1856.....	XIV.
14817	Kahle, Mathew S.	Scrapers, dumping.....	May 6, 1856.....	IX.
14816	Kahle, Mathew S.	Clover seed, machines for sowing.....	May 6, 1856.....	I.
15103	Kaighn, George B.	Vehicles, shafts of, mode of attaching horses to.....	June 10, 1856.....	I.
14243	Keach, Abram, et al. (See Sargent & Keach, assignors) Keenhold, Ferdinand. Keeler, Jas. R. (See Woodford, E. S., assignor.) Kelberg & Gissing. (See Gissing & Kelberg, assignors to Morris.)	Wrench.....	Feb. 12, 1856.....	II.
15809	Kellogg, D. J.	Photographic instruments.....	Sept. 30, 1856.....	XVIII.
15296	Kells, Philip H.	Horse power, reversible.....	July 8, 1856.....	XIII.
406	Kells, P. H.	Horse power, reversible.....	Oct. 28, 1856.....	Reissue.
14361	Kelly, James	Scales, weighing.....	Mar. 4, 1856.....	XII.
15886	Kelly, James.	Ships' blocks, anti-friction bushing for.....	Oct. 14, 1856.....	VII.
14101	Kendall, A.	Shingle machines.....	Jan. 15, 1856.....	XIV.
14021	Kendall, Moses W. S. Kendrick, J., P. Bennet and L. A. Cook. (See Glines, H. M., assignor.)	Smoke-houses.....	Jan. 1, 1856.....	IX.
14135	Kennedy, David	Vata, tan, arrangement of.....	Jan. 22, 1856.....	IV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15241	Kennedy, E. A., and P. B. Green. (See Green & Kennedy.)	Hinges, butt, machine for grinding.....	July 1, 1856.....	II.
15737	Kenney, Cyrus, and William Gurley.....	Sleighs, shafts to, mode of attaching.....	Sept. 16, 1856.....	X.
16122	Kenney, George.....	Carriages, turning circles for.....	Nov. 25, 1856.....	X.
15460	Kenny, George, assignor to George Kenny and George N. Davis.	Whiffle-trees.....	July 29, 1856.....	X.
15461	Kenny, George, assignor to George Kenny and George N. Davis.	Whiffle-trees.....	July 29, 1856.....	X.
14316	Kent, Edward N.....	Gold and other precious metals from foreign substances, machines for separating.....	Feb. 26, 1856.....	II.
361	Kent, Joseph (See Brown, J. S., assignor.)	Nuts, washers, &c., machine for making.....	Mar. 18, 1856.....	Reissue.
15949	Kern, James M.....	Washing machines.....	Oct. 21, 1856.....	XVII.
16209	Kern, James M.....	Seeding machines.....	Dec. 9, 1856.....	I.
14268	Kern, James M., assignor to Enoch P. Fitch, and Isaac Scott.	Saws, circular, method of concaving.....	Feb. 12, 1856.....	XIV.
14705	Kern, James M., assignor to Isaac Scott and E. P. Fitch.	Saws, circular, method of adjusting for concave or convex work.....	April 15, 1856.....	XIV.
14457	Kernan, Edward R.....	Window shades, transparent, processes for making.....	Mar. 18, 1856.....	IV.
15767	Kerr, David B.....	Carpeting, ingrain, manufacturing.....	Sept. 23, 1856.....	III.
14178	Kershaw, E., assignor to Kershaw and H. N. Hooper & Co.	Lock, cell.....	Jan. 29, 1856.....	II.
15041	Keeling, George.....	Fire-arms.....	June 3, 1856.....	XIX.
15657	Ketcham, Charles.....	Pen, fountain, ruling.....	Sept. 2, 1856.....	XVIII.
15339	Ketchum, A. C.....	Wheels, railroad car.....	July 15, 1856.....	X.
14788	Ketchum, A. C., assignor to Edward B. Olcott.....	Knives, cleaning, machines for.....	April 29, 1856.....	XVII.
14960	Ketchum, Samuel C.....	Hat bodies, machines for sizing.....	May 27, 1856.....	III.
14102	Ketchum, William F.....	Harvesters, grain and grass.....	Jan. 15, 1856.....	I.
14961	Ketchum, William F.....	Mowing machines.....	May 27, 1856.....	I.
	Kay, Charles H., administrator. (See Blunt, S. F.)			

16240	Keyes, H	Apples, paring, machines for	Dec. 16, 1856	XVII.
14506	Kiefer, Konrad	Chairs, fan rocking	Mar. 25, 1856	XVII.
15851	Kilburn, Edwin, and Artemus and Cheoney	Wood, bending, method of	Oct. 7, 1856	XIV.
14136	Killam, Joseph W	Sticks to polygonal forms, machine for dressing	Jan. 22, 1856	XIV.
	Kimball, Thompson, et al. (See Buck, Joab, assignor.)			
15658	Kimball, W. H., and A. J. French, assignors to themselves and A. H. Noyes.	Bedstead, spring	Sept. 2, 1856	XVII.
14317	Kimball, Wm. M.	Lamps	Feb. 26, 1856	V.
14318	King, Jas. T.	Steam generator, domestic	Feb. 26, 1856	V.
14244	King, Jas. T.	Steam condensers	Feb. 12, 1856	VI.
14818	King, Jas. T.	Washing machines	May 6, 1856	XVII.
15134	King, John C.	Pumps, double-acting, valve for	June 17, 1856	XI.
14103	King, Samuel M.	Sbingle machine	Jan. 15, 1856	XIV.
15566	King, Wm. H., assignor to Wm. H. King and Isaac Hyneman.	Sweeping gutters, machine for	Aug. 19, 1856	IX.
14873	Kingsland, Edmund	Brick machines	May 13, 1856	XV.
16239	Kingsland, Joseph, jr.	Paper pulp, grinding, machinery for	Dec. 16, 1856	III.
16278	Kingsland, Joseph, jr.	Paper pulp engines	Dec. 24, 1856	III.
16316	Kingsland, Joseph, jr.	Paper pulp grinding, process of	Dec. 24, 1856	III.
15852	Kinsley, Israel	Paper making machines, feeding pulp to	Oct. 7, 1856	III.
14411	Kinsman, S. A., and S. Field	Hats, ironing, machinery for	Mar. 11, 1856	III.
14725	Kinyon, Jas. H., and Jas. Hollingsworth	Cotton cleaner	April 22, 1856	III.
15659	Kirby, W. A.	Harvesting machines	Sept. 2, 1856	I.
14694	Kirby, Wm. A.	Harvesters, grain and grass	April 15, 1856	I.
14164	Kirchhof, Chas.	Telegraph, electric	April 15, 1856	VIII.
15135	Kirk, Lewis	Brick presses	June 17, 1856	XV.
16241	Klahr, Samuel	Boring machines	Dec. 16, 1856	XIV.
14586	Klein, Ferdinand	Skates	April 1, 1856	XXII.
14286	Klein, Francis I.	Pen-holder, flexible	Feb. 19, 1856	XVIII.
14665	Klinck, G. (See Sayre & Klinck.)			
15660	Kline, Jas., and Simon V. Kline	Cars, railroad, safety platforms between	April 15, 1856	X.
15011	Knaapp, John H.	Pen and pencil case	Sept. 2, 1856	XVIII.
15136	Knauer, Christian	Press, copying	June 3, 1856	XVIII.
	Knauer, Christian, assignor to Warwick, Atterbury & Co.	Locks, door	June 17, 1856	II.
16059	Knecht, Rudolph	Ships, etc., method of ventilating	Nov. 11, 1856	VII.
15519	Kneeland, Cyrus F.	Coal hods	Aug. 12, 1856	V.
15611	Knight, Judson	Caster, ball, for trunks and furniture	Aug. 26, 1856	XVII.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14614	Knight, Robert T.	Envelopes, construction of.	April 8, 1856.	XVIII.
15185	Knight, Robert T.	Envelopes	June 24, 1856.	XVIII.
	Knight, Watson & Wooster. (See Watson, Wm. C., assignor.)			
14160	Knowles, Hazard.	Mortising tool.	Jan. 20, 1856.	XIV.
15186	Knowles, Lucius J.	Looms	June 24, 1856.	III.
16016	Knowles, Lucius J.	Looms	Nov. 11, 1856.	III.
15887	Knox, Samuel A.	Plows	Oct. 14, 1856.	I.
16340	Koenig, Julius J.	Type, composing and distributing, machine for	July 15, 1856.	XVIII.
15853	Krauser, S.	Fluids, measuring, method of, while drawing.	Oct. 7, 1856.	XI.
16060	Kruse, Henry.	Wagons	Nov. 11, 1856.	X.
15810	Kuhna, B., and M. J. Haines	Planters, seed.	Sept. 30, 1856.	I.
15520	Kulmann, F.	Compounds, paint, vehicle for	Aug. 12, 1856.	IV.
15699	Kulinski, John.	Cars, railroad, collision apparatus.	Sept. 9, 1856.	X.
14161	Kunler, Noah W.	Pill-making machine	Jan. 29, 1856.	XX.
15078	Kurtzman, Joseph	Sawing mills, head-blocks of, method of operating.	June 10, 1856.	XIV.
14565	La Baw, Geo. W.	Boat, life	April 1, 1856.	VII.
14686	La Baw, Geo. W.	Hoisting drums.	April 15, 1856.	XII.
14643	La Baw, Geo. W., assignor to himself, Joseph Colton, and Theo. Howell.	Boats, life, propellers for.	May 6, 1856.	VII.
14631	Lacey, E. P.	Planters, corn.	April 8, 1856.	I.
16279	Lacy, Edward W.	Hemp brakes	Dec. 23, 1856.	III.
16250	Ladd, Jesse	Shoe pegs, machine for pointing.	Dec. 23, 1856.	XVI.
	Laing & Spencer. (See Emmons, Phineas, assignor.)			
16661	Laub, Charles B. (See Gould & Lamb.)	Churns.	Sept. 2, 1856.	I.
14709	Lamb, Lemuel.	Harvesters, automatic rakes for	April 29, 1856.	I.
960	Lamb, Salem T.	Cars, railroad.	Mar. 18, 1856.	X.
16768	La Mothe, B. J.	Hoops, notching, machine for	Sept. 23, 1856.	XIV.
	Lamson, Daniel.			
	Lamson, Nathaniel. (See Ball, Thomas C., assignor.)			

14667	Lawrence, Palmer.....	Fire-arms.....	April 15, 1856.....	XIX.
16281	Laudfear, Wm. R.....	Sewing machines.....	Dec. 23, 1856.....	III.
14962	Landis, Charles K.....	Hydrants, steam, arrangement of means for operating the valves of.....	May 27, 1856.....	XI.
15243	Lanorgan, Andrew.....	Pastilles, disinfecting.....	July 1, 1856.....	IV.
15341	Langdell, Giles, and Marcus A. Root.....	Photographic pictures, mode of tinting.....	July 15, 1856.....	XVIII.
15427	Langwith, F. R.....	Clamp for plumbers.....	July 29, 1856.....	II.
16092	Lapham, A., assignor to himself and S. Wilkes.....	Boilers, steam, and kettles combined.....	Nov. 18, 1856.....	VI.
15187	Large, Daniel.....	Boats, ice, arrangement of means attached to.....	June 24, 1856.....	VII.
14319	Latrobe, John H. B.....	Fire-arms, percussion locks for.....	Feb. 26, 1856.....	XIX.
14963	Latta, A. B.....	Valves, safety, for steam engines.....	May 27, 1856.....	VI.
15297	Latta, A. B.....	Carriages, steam, wheel for.....	July 9, 1856.....	X.
15244	Lawrens, John.....	Gun carriage.....	July 1, 1856.....	XIX.
14104	Lavender, Wm. R., and Atkins Smith.....	Steering wheel stopper.....	July 15, 1856.....	VII.
15738	Law, Hervey.....	Paper, cutting, machine for.....	Sept. 16, 1856.....	III.
	Lawrence, A., and J. G. Abbott. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
16038	Lawrence, D. M.....	Shutter fastener.....	Nov. 4, 1856.....	II.
15980	Lawrence, George C.....	Soap mixtures.....	Oct. 28, 1856.....	IV.
15242	Lawrence, Henry.....	Marble-sawing machine.....	July 1, 1856.....	XV.
14630	Lawrenson, Peter.....	Sowing seed broadcast, machines for.....	April 8, 1856.....	I.
14875	Lawson, O. G.....	Blow-pipes.....	May 13, 1856.....	V.
16061	Lawson, Robert.....	Hydrants, waste-valve for.....	Nov. 11, 1856.....	XI.
147	Leach, James O.....	Looms.....	July 8, 1856.....	Add'l impt.
14458	Learned, Charles. (See Brown, John L., assignor.)			
15012	Leavenworth, Lucius.....	Churns.....	Mar. 18, 1856.....	I.
131	Leavitt, William D.....	Sawing-machine.....	June 3, 1856.....	XIV.
14668	Leeds, L. W., and R. M. Smith.....	Hydraulic heaters.....	Feb. 5, 1856.....	Add'l imp't.
14023	Lefferts, Marshall.....	Bedsteads, metallic.....	April 15, 1856.....	XVII.
	Leibee, Daniel.....	Amalgamator, gold.....	Jan. 1, 1856.....	II.
	Leibrant, McDowell & Co. (See Smith, Brown, & Reed, assignors.)			
14964	Leicht, Conrad.....	Billiard cues.....	May 27, 1856.....	XXII.
14365	Le Mat, Alexander.....	Ships and other vessels, means for increasing the buoyancy of.....	Mar. 4, 1856.....	VII.
15925	Le Mat, Alexander.....	Fire-arm.....	Oct. 21, 1856.....	XIX.
16124	Lemon, Thomas D. (See Fravel, Abraham, assignor.)	Fire-arms.....	Nov. 25, 1856.....	XIX.



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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14459	Lempeke, A.....	Wind-mill, self-regulating.....	Mar. 18, 1856.....	XI.
14566	Lent, Vincent D.....	Springs, spiral, former for.....	April 1, 1856.....	II.
14820	Leonard, George.....	Fire-arms, repeating.....	May 6, 1856.....	XIX.
14486	Leonard, Lemuel M. (See Herrick & Leonard.) Leonard, Orville, assignor to O. Leonard and Geo. H. Reynolds.	Engines, steam, cut-off gear for.....	Mar. 18, 1856.....	VI.
16282	Letort, James.....	Door-fasteners.....	Dec. 23, 1856.....	II.
14876	Lettington, Horace.....	Bits, fastening.....	May 13, 1856.....	II.
14508	Lewis, Charles H.....	Cars, railroad, spring platform for.....	Mar. 25, 1856.....	X.
14024	Lewis, Charles N.....	Pump.....	Jan. 1, 1856.....	XI.
14245	Lewis, R. W.....	Cans, preserve, sealing.....	Feb. 12, 1856.....	XVII.
15811	Lewis, S. J., and W. Alston.....	Saw-gunners'.....	Sept. 30, 1856.....	XIV.
16093	Lewis, Spencer.....	Bedstead fastenings.....	Nov. 18, 1856.....	XVII.
16242	Lewis, Wm. and W. H.....	Photographic baths.....	Dec. 16, 1856.....	XVIII.
15854	Lewis, W. and W. H., assignors to Malouzo J. Drummond	Photographic cameras, plate-holder for.....	Oct. 7, 1856.....	XVIII.
14507	Lewy, Benj. M.....	Chairs, fan rocking.....	Mar. 25, 1856.....	XVII.
15633	Liblong, John, assignor to Edward Brown and Jas. R. Case.	Boiling, device for preventing liquids from, over the sides of vessels.	Aug. 26, 1856.....	V.
15613	Liddle, John.....	Furnaces, air-heating.....	Aug. 26, 1856.....	V.
15888	Ligon, Edwin T.....	Pumps.....	Oct. 14, 1856.....	XI.
16210	Lightfoot, Goodrich.....	Churns.....	Dec. 9, 1856.....	I.
14162	Lincoln, A. L. (See Paige, Lucius, assignor.)	Macaroni sewer.....	July 1, 1856.....	XVII.
15266	Lincoln, Albert L., assignor to himself and Chas. M. Foss.	Sowing seed broadcast, machine for.....	April 8, 1856.....	I.
14629	Lincoln, Jesse.....	Painting or varnishing woven wire.....	Feb. 26, 1856.....	IV.
14320	Lincoln, William.....	Lamps, fountain.....	June 24, 1856.....	V.
15198	Linden, N.....	Gun, magazine, repeating and needle.....	Dec. 23, 1856.....	Release.
415	Lindner, Edward.....	Gun, magazine, repeating and needle.....	Dec. 23, 1856.....	Release.
416	Lindner, Edward.....	Gun, magazine, repeating and needle.....	Dec. 23, 1856.....	Release.
14819	Lindner, Edward.....	Guns, breech-loading.....	May 6, 1856.....	XIX.
14246	Lindner, Edward, and Conrad Hoffman.....	Porte-monnaies.....	Feb. 12, 1856.....	XVIII.

14504	Lindner, G. H..... Lindsey, John P., and Thomas Sands. (See Sands, Thomas, assignor.)	Door-fasteners.....	April 8, 1856.....	II.
14965	Lindsay, William B.....	Cotton gins.....	May 27, 1856.....	III.
14460	Lippincott, John.....	Projectiles, percussion.....	Mar. 18, 1856.....	XIX.
14896	Lippincott, Joseph M.....	Locks.....	May 13, 1856.....	II.
15489	Lippincott, Joseph..... Little & Sweetland. (See Vedder & Sanderson, assignors, and Vedder & Ripley, assignors.)	Locks.....	Aug. 5, 1856.....	II.
14362	Littlefield, Dennis G.....	Stoves and furnaces for railroad cars and other purposes.....	Mar. 4, 1856.....	V.
14299	Livermore, George W., assignor to Livermore Manufacturing Company.	Stave machine.....	Feb. 19, 1856.....	XIV.
14162	Lloyd, Daniel.....	Window shades, stencilling apparatus for.....	Jan. 29, 1856.....	XVII.
395	Locher C.....	Boats, life, folding.....	Sept. 16, 1856.....	Rebuse.
15403	Lockwood, Asabel, assignor to L. B. Flanders.....	Planing machine.....	July 22, 1856.....	XIV.
15137	Lockwood, N. S., and J. D. Winn.....	Plows.....	June 17, 1856.....	I.
15042	Longley, Servetus..... Loomis, Timothy H., et al. (See Bosworth, Albert, assignor.)	Barrels, &c., rolling and handling, apparatus for.....	June 3, 1856.....	XXII.
15979	Lord & Day. (See Day, Charles, and Alanson D. Lord.)	Carriages, perch couplings for.....	Oct. 28, 1856.....	X.
339	Lord, William S.....	Types, composing and setting, machine for.....	Jan. 8, 1856.....	Rebuse.
16094	Loughborough, W. S.....	Melodeons.....	Nov. 18, 1856.....	XVIII.
14402	Louis, Lafayette.....	Harvester cutters.....	Mar. 11, 1856.....	I.
15855	Love, Israel S.....	Harvesters.....	Oct. 7, 1856.....	I.
14509	Love, N. M. (formerly N. L. Murphy).....	Piano-forte action.....	Mar. 25, 1856.....	XVIII.
14789	Lowe, Samuel W., assignor to himself and Jacob M. Beck.	Printing, machines for embossing and.....	April 29, 1856.....	XVIII.
15428	Lowe, Samuel W., assignor to Samuel Lowe and Wm F. Scheible.	Printing press, portable.....	July 30, 1856.....	XVIII.
14643	Low, William H.....	Envelopes, machine for making.....	April 8, 1856.....	XVIII.
14670	Loyd, William.....	Stereoscope case.....	April 15, 1856.....	XVIII.
15104	Luce, C. O.....	Seeding machines.....	June 10, 1856.....	I.
14874	Lufkin, C. M.....	Mowing machines.....	May 13, 1856.....	I.
14920	Lull, Harvey.....	Paddle wheels, feathering.....	May 20, 1856.....	VII.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
16062	Lund, George D.....	Saws, reciprocating, method of hanging.....	Nov. 11, 1856.....	XIV.
14567	Lutz, Stimmel.....	Spark-arresters.....	April 1, 1856.....	V.
14877	Lyford, Zebulon.....	Chairs, portable.....	May 13, 1856.....	XVII.
14510	Lyman, A. S.....	Cooling and ventilating rooms, &c., method of.....	Mar. 25, 1856.....	V.
14669	Lyman, Wm. H.....	Whip-socket.....	April 15, 1856.....	XXII.
15997	Lynabon, D., and C. J. Wing, assignor to D. Lynahon.	Car, railroad, coupling.....	Oct. 28, 1856.....	X.
16103	Lyndall, J., assignor to C. Roberts.....	Grain separators and conveyers.....	Nov. 18, 1856.....	XIII.
15188	Lyon, Benjamin F.....	Fence, field.....	June 24, 1856.....	IX.
15700	Lyon, James W.....	Screw-cutter.....	Sept. 9, 1856.....	II.
15490	Lyon, T. Kenton.....	Pen-holder.....	Aug. 5, 1856.....	XVIII.
14770	Lyon, Wm., & Charles W. Dickinson.....	Gas metres, dry, construction of.....	April 29, 1856.....	V.
14461	Mabury, James B.....	Stoves.....	Mar. 18, 1856.....	V.
14727	Mace, Alonzo M.....	Lamps, hydrocarbon vapor.....	April 22, 1856.....	V.
14196	Macferran, Samuel.....	Furnaces, hot-air.....	Feb. 5, 1856.....	V.
16040	Mackereley, Benjamin.....	Mill, cider.....	Nov. 4, 1856.....	XIII.
15662	Mackintire, James.....	Ale and beer coolers.....	Sept. 2, 1856.....	IV.
15079	Macomber, A. S.....	Wheelwrights' machinery.....	June 10, 1856.....	XIV.
15769	Macomber, D. O.....	Omnibus.....	Sept. 23, 1856.....	X.
14403	Macomber, Horatio N.....	Blow-pipe, spirit.....	Mar. 11, 1866.....	V.
814	Macy, John C.....	Grate, ornamental, for fire-places.....	July 9, 1856.....	Design.
14563	Maffitt, Robert.....	Motion, reciprocating into rotary, method of converting.....	April 1, 1856.....	XIII.
14940	Magee, John, assignor to John Magee and Wm. J. Towne.	Stoves, ventilating regulators and damper for.....	May 20, 1856.....	V.
14511	Mahan, J. W.....	Bench, carpenters'.....	Mar. 25, 1856.....	XIV.
14569	Mahan, J. W.....	Bench, mitreing.....	April 1, 1856.....	XIV.
15739	Mahan, J. W.....	Bench, carpenters'.....	Sept. 16, 1856.....	XIV.
16283	Maier, Wm.....	Crane, blacksmiths'.....	Dec. 23, 1856.....	XII.
15138	Mallard, L. John, and Wm. S. Baker.....	Cotton gins, roller of, feeder for.....	June 17, 1856.....	III.
15139	Mallett, Samuel, and Augustus B. Smith.....	Teeth, artificial, adjustable punches for setting.....	June 17, 1856.....	XX.
14923	Mallory, O. E.....	Eave-troughs, machine for making.....	Jan. 1, 1856.....	IX.

14063	Mannan, John F.	Fuel, wet, mode of burning	Jan. 8, 1856	V.
14137	Mauley, Emmons	Riveting-machine	Jan. 22, 1856	II.
15814	Manly, M. M.	Marble, sawing in taper form, machine for	Sept. 30, 1856	XV.
14966	Mann, Charles A., jr.	Excavators	May 27, 1856	IX.
15013	Mann, Henry F.	Harvester-frames	June 3, 1856	I.
14404	Mann, Jacob J.	Mowing-machines	Mar. 11, 1856	I.
15044	Mann, Jacob J. & H. F.	Reaping-machines	June 3, 1856	I.
14138	Manning, Jos. S.	Mowing-machines	Jan. 22, 1856	I.
15014	Manning, W. N.	Melodeons	June 3, 1856	XVIII.
14026	Manny, John H.	Harvesters	Jan. 1, 1856	I.
14148	Manny, John H.	Harvesters, grain and grass	Jan. 22, 1856	I.
14149	Manny, John H.	Harvester cutter-bars	Jan. 22, 1856	I.
354	Manny, John H., assignor to P. H. Watson	Harvesting-machines	Feb. 19, 1856	Reissue.
14726	Manny, Pells	Plow, sub-soil	April 22, 1856	I.
15927	Manny, P.	Harvesters	Oct. 21, 1856	I.
15926	Manny, P.	Harvesters, sickles for	Oct. 21, 1856	I.
16016	Manny, Pells	Rakes for reapers, automatic	Nov. 11, 1856	I.
14570	Marable, Thomas E.	Seeds or grain in the field, machines for gathering	April 1, 1856	I.
	Marble, Jarvis C. (See Holmes, George W., assignor.)			
14027	Markillie, Thomas R.	Lath sawing machines, bed for	Jan. 1, 1856	XIV.
15703	Marland, John	Delaines, manufacturing, process of	Sept. 9, 1856	III.
14257	Marquise, A. E. and C., and Chas. Emerson	Plows, draining, mole for	Feb. 9, 1856	I.
14128	Marsh, David, assignor to T. B. Stout, J. A. Cody, and David Marsh.	Mill-stones, hanging	Jan. 15, 1856	XIII.
14028	Marsh, Joseph	Sash-lock	Jan. 1, 1856	II.
14921	Marsh, Nathan B.	Water meter	May 20, 1856	XI.
14042	Marsh, Philo, assignor to Marsh & Howland	Oils, treating	Jan. 1, 1856	IV.
15614	Marshall, A. R.	Gas-burners, automatic attachment to	Aug. 26, 1856	V.
	Marshall & Butterfield. (See Butterfield, J. S., and S. Marshall.)			
16063	Martin, Jas. W.	Umbrellas, preparing ratan for	Nov. 11, 1856	XXI.
14939	Martin, Jas. W., assignor to himself and Lewis Rotherwell.	Weighing-cart	May 20, 1856	XII.
15140	Martin, Jos. L.	Odometers and counting machines	June 17, 1856	VIII.
15616	Martratt, Cornelius	Planters, hand, corn	Aug. 26, 1856	I.
14671	Martz, George	Hoisting coal, apparatus for	April 15, 1856	XII.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14321	Martz, Nathan. Marvel & Keach. (See Sargent & Keach, assignors.)	Rakes, hbræ.	Feb. 20, 1856.	L.
134	Mascher, John F. Mason & Hamlin. (See Hamlin, Emmons, assignor.) Mason, J., and N. C. Sherman. (See Sherman & Mason.)	Daguerreotype cases.	Feb. 19, 1856.	XVIII.
15891	Mason, John L.	Porte-monnaies.	Oct. 14, 1856.	XVIII.
15379	Mason, Joshua.	Metal planers, cutter stock for.	July 22, 1856.	II.
16284	Mason, William.	Fluid meters, device for operating by hand.	Dec. 23, 1856.	XI.
14771	Massey & Stratton. (See Allen, John F., assignor.)	Corn shellers.	April 29, 1856.	I.
14363	Mathers, Ebenezer.	Planes, bench.	Mar. 4, 1856.	XIV.
14462	Mathers, Ebenezer.	Trees, felling, machine for.	Mar. 18, 1856.	I.
356	Matthew, David.	Spark and gas-consumers.	Feb. 26, 1856.	Reissue.
357	Matthew, David.	Spark-arresters.	Mar. 4, 1856.	Reissue.
15063	Matthew, David.	Engines, steam, condensers for.	Sept. 2, 1856.	VI.
14730	Mauck, R. C., and W. T. McGahey.	Harvesters, corn.	April 22, 1856.	I.
14616	Mawrer, Wm.	Locks.	April 8, 1856.	II.
15701	Maxson, Wm. P.	Harvester, grain and grass.	Sept. 9, 1856.	I.
16035	Maxwell & Merrill. (See Merrill, Ira, assignor.) Maycock, Thos., assignor to himself and Henry Rice.	Tile, drain, machine.	Nov. 4, 1856.	XV.
15141	Maynard, Edward. McArthur, A. H., & Co. (See Gibbs, Samuel W., assignor.)	Cartridges.	June 17, 1856.	XIX.
15380	McBride, Matthew J.	Stone or marble, sawing, machine for.	July 22, 1856.	XV.
15043	McClesney, John. McClintock, J. S., and George Feltors. (See Feltors and McClintock.)	Washing machines.	June 3, 1856.	XVII.
15142	McComb, D.	Bands, non-elastic, for bales of cotton or other fibrous materials.	June 17, 1856.	XII.

15604	McCracken, Joseph	Process of stiffening hat bodies	Sept. 2, 1856.....	IV.
15929	McCracken, Joseph	Hat bodies, sizing	Oct. 21, 1856.....	III.
14879	McCracken, W. J.	Trunks, wardrobe	May 13, 1856.....	XVI.
14672	McCrery, B. F.	Settees, reversible, backs of, double acting catch for	April 15, 1856.....	XVII.
14463	McCrone, John	Winding frames, cone tubes for	Mar. 18, 1856.....	III.
14322	McCurdy, James S.	Binding guides	Feb. 26, 1856.....	III.
15605	McCully, John F.	Glass, black bottle, manufacture of	Sept. 2, 1856.....	XV.
379	McCurdy, R. A. L., assignor to David G. Olmstead.	Gins, cotton.....	July 15, 1856.....	Reissue.
15771	McDonough, Thomas	Engine, air	Sept. 23, 1856.....	XI.
	McDowell, Leibrant & Co. (See Smith, Brown & Read, assignors)			
	McGahey, W. T. (See Mauck & McGahey.)			
15090	McGlaw, Patrick	Die stock cutting screws	June 10, 1856.....	II.
14105	McGrath, Horatio	Bits for boring felloses and tenoning spokes	Jan. 15, 1856.....	XIV.
15812	Mellroy, G. R.	Fence, portable	Sept. 30, 1856.....	IX.
14772	McInnes, John	Printing woollen and other fabrics, machine for	April 29, 1856.....	XVIII
14673	McIntosh, W. J.	Rice, reaping, implement for	April 15, 1856.....	I.
16243	McIntyre, Joseph T.	Gate, railroad, for cattle guard.....	Dec. 16, 1856.....	IX.
16095	McKeage, B.	Slave jointer.....	Nov. 18, 1856.....	XIV.
16017	McLachlan, William	Burglars' alarm	Nov. 11, 1856.....	XXII.
	McLaren, Bryant, & Anderson. (See Anderson, McLaren & Bryant.)			
	McLaughlin & Dougherty. (See Dougherty & McLaughlin.)			
14364	McLaughlin, George T.	Car seats, railroad.....	Mar. 4, 1856.....	X.
15563	McLean, Sherman	Cupping instruments.....	Aug. 19, 1856.....	XX.
14695	McLellan, James	Bars, railroad, repairing.....	April 15, 1856.....	II.
14571	McManus, Philip	Wrenches	April 1, 1856.....	II
15245	McMullen, John	Netting machines.....	July 1, 1856.....	III.
14464	McMullin, R.	Process for making elastic rubber cloth	Mar. 18, 1856.....	IV.
15429	McMurtry, John	Slave machine	July 29, 1856.....	XIV.
14108	McNab, James, and Adam Carr	Valves, stop, steam.....	Jan. 15, 1856.....	VI.
417	McNair, John G.	Carpets, manufacturing	Dec. 23, 1856.....	Reissue.
16285	McNary, Wm. H.	Hosiery, manufacture of	Dec. 23, 1856.....	Reissue.
14247	McPherson, John L., and Jacob O. Joyce.....	Pumps, diaphragm.....	Feb. 12, 1856.....	XI.
15928	McPhetridge, C. A.	Spike machine	Oct. 21, 1856.....	II.
16096	McPhetridge, C. A.	Cotton gins	Nov. 18, 1856.....	III.
16097	McPhetridge, C. A.	Harvesters, grain binder for	Nov. 18, 1856.....	I.
16211	McPhetridge, C. A.	Candle-dipping machine.....	Dec. 9, 1856.....	IV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14197	Monroe & Hood. (See Hood, B. L., and E. P. Munroe)	Carriage springs.....	Feb. 5, 1856.....	X.
15249	Montgomery, Richard.....	Bedstead.....	July 1, 1856.....	XVII.
14968	Mooney, H. L., and W. B. Carter.....	Hubs, boring tool for.....	May 27, 1856.....	XIV.
15190	Mooney, John.....	Metals, tool for cutting.....	June 24, 1856.....	II.
15770	Moor, Robert.....	Hubs of wheels, securing spokes in the.....	Sept. 23, 1856.....	X.
15594	Moore, Charles.....	Process of preparing linseed, &c., for pressing, in extracting oil.....	Aug. 19, 1856.....	IV.
16256	Moore, Charles, assignor to himself, William G. Sheldon, and Lorenzo B. Chandler.	Paper, cutting and folding, machine for.....	Dec. 16, 1856.....	XVIII.
16212	Moore, Edwin.....	Planters, seed.....	Dec. 9, 1856.....	I.
14107	Moore, F. H.....	Coal hole covers, safety.....	Jan. 15, 1856.....	IX.
14200	Moore, George R.....	Pokers, fire.....	Feb. 5, 1856.....	V.
15382	Moore, John.....	Polishing machine.....	July 22, 1856.....	XIV.
15433	Moore, John.....	Planters, potato.....	July 29, 1856.....	I.
15932	Moore, John.....	Screw machine.....	Oct. 21, 1856.....	II.
15890	Moore, John H.....	Saws, reciprocating method of hanging.....	Oct. 14, 1856.....	XIV.
16134	Moore, Joseph A., and Asahel H. Patch.....	Harvesters: finger bar, arrangement for.....	Nov. 25, 1856.....	I.
15569	Moore, Larkin L.....	Harvesting machine.....	Aug. 19, 1856.....	I.
14201	Morandi, Francis.....	Lanterns.....	Feb. 5, 1856.....	V.
15432	Morey, D. C., and S. A. Garrison. (See Garrison & Morey)	Soap boiling apparatus.....	July 29, 1856.....	IV.
14770	Morfit, Campbell.....	Planters, potato.....	Feb. 12, 1856.....	I.
14465	Morgan, Charles, assignor to Samuel Ewlen.....	Planters, seed.....	Mar. 18, 1856.....	I.
	Morgan, Elijah.....			
	Morgan, Eustis P. (See Thompson, William H., and E. P. Morgan.			
	Morgan & Seymour. (See Seymour & Pease, assignors.)			
	Morgan & Seymour. (See Seymour & Pease, assignors)			

16147	Morgan & Seymour. (See Seymour, William H., assignor.)	Chairs, railroad.....	Dec. 2, 1856.....	X.
15143	Morley, James H.....	Smoothing-irons.....	June 17, 1856.....	XVII.
16065	Morrill, Oscar F.....	Clothes dryers.....	Nov. 11, 1856.....	XVII.
	Morris, D. A. (See Gisinger & Kelberg, assignors)			
15300	Morris, Ephraim.....	Coal, raising and dumping, apparatus for.....	July 9, 1856.....	IX.
14405	Morris, John C.....	Wood, method of bending.....	Mar. 11, 1856.....	XIV.
	Morrison, Cox, Warren, & Co. (See Pierce & Duley, assignors.)			
	Morrison, Cox, Warren, & Co. (See Pierce & Burnam, assignors.)			
	Morrison, Cox, Warren, & Co. (See Burnam, assignor.)			
15105	Morrison, Ebenezer.....	Corn-shellers.....	June 10, 1856.....	I.
	Morrison, E. R., and A. Wyckoff, assignor to A. Wyckoff. (See Wyckoff & Morrison.)			
	Morrison, Fuller, & Warren. (See Pierce & Duley, assignors.)			
	Morrison, Fuller, & Warren. (See Pierce & Duley, assignors.)			
	Morrison, Fuller, & Warren. (See Duley, James J.)			
14644	Morrison, Robert J.....	Harvesting machines.....	Dec. 16, 1856.....	I.
	Morrow, John, and Andrew Hartupee. (See Hartupee & Morrow.)			
	Morrow, John, J. P. Haigh, and A. Hartupee. (See Kenyon, William, assignor.)			
15813	Morrow, S. G. L.....	Excavators.....	Sept. 30, 1856.....	IX.
14840	Morse, C. B.....	Planing machine.....	May 13, 1856.....	XIV.
15986	Morse, G. W.....	Cartridges.....	Oct. 28, 1856.....	XIX.
15995	Morse, G. W.....	Fire-arms, breech-loading.....	Oct. 28, 1856.....	XIX.
15248	Moses, Oren.....	Meat, mincing, machine for.....	July 1, 1856.....	XVII.
15342	Moses, Oren.....	Straw-cutter.....	July 15, 1856.....	I.
	Mott, J. L., Iron Works. (See Demarest, John, assignor.)			
15383	Mott, John M., jr.....	Marble sawing machine.....	July 22, 1856.....	XV.
14773	Moulton, Elisha P.....	Door-fasteners.....	April 29, 1856.....	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15982	Moulton, Joseph C.	Hook, suspension, combined, and insect insulator	Oct. 28, 1856.	XVII.
16245	Moultrie, William.	Press for printing hat linings.	Dec. 16, 1856.	XVIII.
	Mowe, A. M., and E. K. Haynes. (See Haynes, E. K., assignor.)			
15880	Mozart, Don J.	Fans, automatic, escapement movement for	Oct. 14, 1856.	XXII.
847	Muller, Charles	Statuettes of Burton as Captain Cuttle	Oct. 21, 1856.	Design.
771	Muller, Nicholas.	Clock-case fronts	April 1, 1856.	Design.
786	Muller, Nicholas.	Clock-case fronts.	April 29, 1856.	Design.
787	Muller, Nicholas.	Clock-case fronts.	April 29, 1856.	Design.
812	Muller, Nicholas.	Clock-case fronts, the base of.	July 1, 1856.	Design.
913	Muller, Nicholas.	Clock-case fronts.	July 1, 1856.	Design.
16247	Mulloy, Jeremiah W.	Mowing and reaping machines.	Dec. 16, 1856.	I.
15045	Mumford, Josiah.	Last-holders, revolving.	June 3, 1856.	XIV.
15981	Mumford, Josiah, and John W. Wilson	Washing machines.	Oct. 28, 1856.	XVII.
15384	Monroe, A.	Water-wheel, reacting.	July 22, 1856.	XI.
15491	Munson, David	Lightning rods	Aug. 5, 1856.	VIII.
15189	Murdoch, Richard.	Carriages, running gear of.	June 24, 1856.	X.
16066	Murphey, E. M.	Respirator, medical.	Nov. 11, 1856.	XX.
	Murphey, N. L. (See Lowe, N. M.)			
14064	Musgrave, H. B.	Stoves, gas cooking	Jan. 8, 1856.	V.
16184	Musehl, William	Potato-diggers	Dec. 9, 1856.	I.
15434	Myers, James, jr.	Coal scuttles.	July 29, 1856.	IX.
15915	Myers, Robert.	Marble sawing machine	June 3, 1856.	XV.
16213	Nason, Jos.	Tubes, connecting	Dec. 9, 1856.	II.
14822	Neal, James.	Gas-burners	May 6, 1856.	XV.
14929	Neal, James, and Charles W. Emery.	Pump	Jan. 1, 1856.	XI.
14632	Neckerman, Michael	Lathes, chuck for	April 8, 1856.	XIV.
	Neff, Wm. and P. Jr. (See Smith, H. L., assignor.)			
14824	Nelach, Robert	Stone, artificial, preparing	May 6, 1856.	XV.
16248	Nelson, Thomas.	Weaving shade cord, machinery for.	Dec. 16, 1856.	III.
15435	Nesmith, John.	Knitting machines	July 29, 1856.	III.
14100	Nesmith, R. D.	Mill stones, machines for dressing	Jan. 15, 1856.	XIII

16148	Neumeyer, Henry.....	Pentagraphs.....	Dec. 2, 1856.....	VIII.
16214	Newell, John, assignor to L. Curtis, for an undivided one-half, and Nevill & Curtis, by J. P. Farver, to Demasius Manufacturing Co.	Cast-steel, making.....	Dec. 9, 1856.....	II.
14677	Newbrough, Wm.....	Churns.....	April 15, 1856.....	I.
15740	Newbury, A. and B.....	Printing press.....	Sept. 16, 1856.....	XVIII.
14406	Newbury, F.....	Fire-arms, revolving.....	Mar. 11, 1856.....	XIX.
14774	Newbury, Frederick.....	Fire-arms.....	April 29, 1856.....	XIX.
15521	Newbury, Frederick D., assignor to Richard Varrick De Witt, jr.....	Fire-arms.....	Aug. 12, 1856.....	XIX.
152	Newbury, Frederick D., assignor to Richard Varrick De Witt.....	Fire arms.....	Sept. 16, 1856.....	Add'l imp't.
15706	Newell, John L.....	Tooth-plates, by the electrotype process, casting artificial.....	Sept. 9, 1856.....	XX.
14675	New England Screw Company. (See Whipple, Cullen, assignor.).....	Lock, haap.....	April 15, 1856.....	II.
14271	Newham, Henry.....	Caldrons.....	Feb. 12, 1856.....	V.
145	Newton, Abner N.....	Fire-arms, breech-loading.....	June 17, 1856.....	Add'l imp't.
15522	Newton, Abner N.....	Fire-arms.....	Aug. 12, 1856.....	XIX.
157	Newton, Abner N.....	Fire-arms, breech-loading.....	Dec. 23, 1856.....	Add'l imp't.
14249	Newton, Elisha P.....	Wrench.....	Feb. 12, 1856.....	II.
14823	Nickelson, Samuel.....	Marble sawing, machines for, in kerfs of varying angles.....	May 6, 1856.....	XV.
15773	Nippes, A. S.....	Saws, grinding, machine for.....	May 23, 1856.....	XIV.
15704	Nixon, Christopher N.....	Ships' rudders, hanging.....	Sept. 9, 1856.....	VII.
15705	Noette, F.....	Wire, cutting and drawing.....	Sept. 9, 1856.....	II.
15893	Noll & Haas. (See Haas, Christian, and John C. Noll.).....	Saw-mill pitmen, adjustable stirrup for.....	Oct. 14, 1856.....	XIV.
15893	Norcross, Samuel C.....			
	North, Chase, & North. (See Vedder & Sanderson, assignors.).....			
	North, Chase, & North. (See Gibbs, S. W., assignor.).....			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	North, Chase, & North. (See Gibbs, S. W., assignor.)			
	North, Chase, & North. (See Vedder & Sanderson, assignors.)			
15144	North, Henry S.	Fire-arms	June 17, 1856.....	XIX.
14697	North, John	Paper, folding, machine for	April 15, 1856.....	XVIII.
15992	North, John	Stone, sawing	Oct. 14, 1856.....	XV.
	North, O. B., & Co. (See Gazlay, A. H., assignor.)			
14821	Norton, Eugene L.	Morocco, machines for figuring and polishing.....	May 6, 1856.....	XVI.
14881	Norton, James L.	File-cutting machine.....	May 13, 1856.....	II.
	Norton, Perry, & Treadwell. (See Gibbs, S. W., assignor.)			
	Norton, Perry, & Treadwell. (See Gibbs, Samuel W., assignor.)			
	Norton, Perry, & Treadwell. (See Gibbs, Samuel W., assignor.)			
	Norton, Perry, & Treadwell. (See Pratt, Samuel F., assignor.)			
	Norton, Treadwell, & Perry. (See Pratt, Samuel F., assignor.)			
	Norton, Treadwell, & Perry. (See Pratt, Samuel F., assignor.)			
15016	Nowell, Foster.....	Carding-machines, wool	June 3, 1856.....	III.
15145	Noye, John T.....	Packer, flour, clutch for.....	June 17, 1856.....	XII.
	Noyes, A. H., et al. (See Kimball & French, assignors.)			
14407	Nycum, Henry.....	Hubs, carriage.....	Mar. 11, 1856.....	X.
	Nye, Thomas C., et al. (See Engelbrecht, Theodore F.)			
14826	Oberholzer, Samuel	Gates, doors, &c., method of hanging	May 6, 1856.....	IX.
	Ogden & Sugleman. (See George Taylor, assignor.)			

14300	Oyden, John T.	Vice, handle for.	Mar.	4, 1856.	II.
14825	Ohmert, Jesse	Ovens.	May	6, 1856.	V.
14030	Oldie, I. J.	Lock, pad	Jan.	1, 1856.	II.
15151	Olendorff, Garret J.	Harrow, revolving	June	17, 1856.	I.
14676	Oliver, H. W.	Clamp, floor	April	15, 1856.	XIV.
14924	Oliver, Wm. G., and Thomas Harrison	Teeth, artificial, devices for setting.	May	20, 1856.	XX.
14141	Olmstead, David G. (See McCurdy, R. A. L., assignor.)				
15301	O'Neil, John.	Sewing-machines	Jan.	22, 1856.	III.
14969	Orcutt, Lysander A.	Dovetailing machine	July	9, 1856.	XIV.
15302	Ormsbee, Marcus	Thread, winding, from skeins	May	27, 1856.	III.
14142	Orr, Adrian V. B.	Shingle-machine	July	9, 1856.	XIV.
15570	Osborn, John T.	Grate-bars	Jan.	22, 1856.	V.
16019	Osborn, William	Bonnets and bonnet-frames, machines for pressing	Aug.	19, 1856.	XXI.
	Osborne, Marnaduke	Felting for coats, hats, &c.	May	22, 1856.	Extension.
	Osgood, Henry B.	Packages, spring-frame for.	Nov.	4, 1856.	XXII.
	Osgood, H. B., and Samuel L. Hay. (See Hay & Osgood.)				
16185	Osgood, Hudson.	Planing-machines	Dec.	9, 1856.	XIV.
15385	Otterson, James P. S.	Fluids under pressure, method of tapping	July	22, 1856.	XI.
15436	Pagett, Washington F.	Binding grain, &c., machines for	July	29, 1856.	I.
14164	Paige, Lucius	Mills, grinding	Jan.	29, 1856.	XIII.
14515	Paige, Lucius	Brakes, railroad car, levers of.	Mar.	25, 1856.	X.
14756	Paige, Lucius, assignor to himself and Albert L. Lincoln.	Studs for wearing apparel	April	22, 1856.	XXI.
15343	Paige, Lucius	Sash-lock	July	15, 1856.	II.
15617	Paige, Lucius	Boilers, steam, water-gauges for	Aug.	26, 1856.	VI.
15250	Painter, M. and C.	Mill-stones, swinging spout for feeding	July	1, 1856.	XIII.
14734	Palmer, Edwin A.	Faucet, measuring	April	22, 1856.	XI.
15743	Palmer, E. A.	Clevis	Sept.	16, 1856.	I.
14289	Palmer, John H.	Tenoning window-blinds, machine for	Feb.	19, 1856.	XIV.
15774	Palmer, S. B.	Blow-pipes	Sept.	23, 1856.	V.
15081	Palmiter, Jason.	Shingle-machine	June	10, 1856.	XIV.
14065	Pancost, William C.	Presses, cheese	Jan.	8, 1856.	XII.
15083	Pardin, H. (See Tyler, C. N., assignor.)	Freezers, ice-cream	June	10, 1856.	XVII.
5492	Parisette, Jacob	Knitting-machines, rotary	Aug.	5, 1856.	III.
	Parisette, Sidney W. and Edgar S. Ella.				

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14617	Parker, Earl, and Wm. Reynolds.....	Valve, automatic thermo-hydro-olao-pneumatic	April 8, 1856.....	XI.
15666	Parker, Edward.....	Buckle for wearing apparel.....	Sept. 2, 1856.....	XXI.
14110	Parker, Ephraim.....	Clothes-pins, machines for making.....	Jan. 15, 1856.....	XVII.
14466	Parker, Geo. W.....	Clothes-pins, machines for making.....	Mar. 18, 1856.....	XVII.
14111	Parker, Ira S.....	Wash-boards.....	Jan. 15, 1856.....	XVII.
15437	Parkes, Thomas and Alfred.....	Printing-press.....	July 29, 1856.....	XVIII.
15571	Parkhurst, Chas., and Chas. Weed	Forging horse-shoe nails, machine for	Aug. 19, 1856.....	II.
15742	Parrott, Wm. P.....	Boiler-furnace, locomotive and steam.....	Sept. 16, 1856.....	VI.
15082	Parry, M. L.....	Saw-teeth, circular, method of repairing.....	June 10, 1856.....	XIV.
14731	Partridge, A. J..... (See Moore & Patch.)	Telegraphs, printing, electro-magnetic.....	April 22, 1856.....	VIII.
14618	Patterson, Andrew..... (See Patterson, Horace, and Calvin D. Smith. (See Smith & Patterson.)	Locks, door.....	April 8, 1856.....	II.
14204	Pattison, Juan.....	Engines, steam, oscillating.....	Feb. 5, 1856.....	V.
15523	Patton, William.....	Sash-fastener	Aug. 12, 1856.....	II.
15891	Paul, Mifflin. (See Worrall, T. D., assignor.)	Bee-hives.....	Oct. 14, 1856.....	I.
14143	Pawling, Chas.....	Wind-wheels, velocity of, method of regulating.....	Jan. 22, 1856.....	XI.
14572	Payne & Wilson. (See Wilson, Geo. F., and Geo. Payne.)	Wind-wheels	April 1, 1856.....	XI.
15194	Peabody, Francis.....	Wind-wheel, self-regulating	June 24, 1856.....	XI.
15192	Peale, Franklin.....	Valve, elastic tubular.....	June 24, 1856.....	XI.
15741	Pease, A.....	Churns.....	Sept. 16, 1856.....	I.
14078	Pease, Henry, assignor to himself and Jas. Roby.. Pease, H., and W. H. Seymour, assignors. (See Seymour & Pease, assignors.)	Mowing-machines.....	Jan. 8, 1856.....	I.
14541	Pease, H., and W. H. Seymour, assignors. (See Seymour & Pease, assignors.)			
940	Peaslee, Horace W.....	Paper-stock, machines for washing.....	Jan 8, 1856.....	Reissue.

14149	Peaslee, Horace W.	Fibrous manufactures, drying cylinders for	Dec. 2, 1856	III.
14112	Peck, Isaac. (See Hazard, O. S., and Isaac Peck.)			
14212	Peck, Reed	Door-fastenings	Jan. 15, 1856	II.
	Peck, Samuel	Daguerreotype cases, hinges of, fastening for the	Feb. 5, 1856	XVIII.
	Peckham, Hendrick & Hopkins. (See Hopkins, Henry S., assignor.)			
14487	Peckham, Merritt	Stoves and furnaces, sectional fire-pots for	Mar. 18, 1856	V.
16259	Pedrick, John C.	Drying grain in the mass, apparatus for	Dec. 16, 1856	I.
14031	Peery, Joseph	Presses, hay and cotton	Jan. 1, 1856	XII.
15296	Pelouze, Edward, jr.	Type-casting machines, valve for	July 22, 1856	XVIII.
14585	Peltou, A. S.	Heating buildings by steam, apparatus for	May 13, 1856	V.
	Penrose, W. H. (See Wimley, John M., assignor.)			
15515	Percy, John	Steam wagon	Sept. 30, 1856	VI.
14925	Perdew, Philip, and Alex. W. Brinkerhoff	Ash-leaching apparatus	May 20, 1856	IV.
14468	Perkinpine, David R.	Axles, railroad car, boxes of	Mar. 18, 1856	X.
15899	Perkins, J., and W. H. Burnet	Metal pipe, bending, machine for	Oct. 14, 1856	II.
16287	Perkins, John H. H.	Furnace, hot-air	Dec. 23, 1856	V.
16023	Perkins, Joshua	Husking corn, machines for	Nov. 4, 1856	I.
14113	Perley, Charles	Ships and other vessels, cargo-ports for	Jan. 15, 1856	VII.
15933	Perley, Charles	Ships' capstans	Oct. 21, 1856	VII.
14516	Perry, Horatio O.	Valve motion for oscillating engines	Mar. 25, 1856	VI.
16020	Perry, Joseph R.	Mortising chisel to its mandrel, joint for uniting a	Nov. 4, 1856	XVI.
	Perry, Norton, & Treadwell. (See Gibbs, Samuel W., assignor.)			
	Perry, Norton, & Treadwell. (See Gibbs, Samuel W., assignor.)			
14619	Perry, Sanford S.	Charring wood	April 8, 1856	V.
	Perry, Treadwell, & Norton. (See Gibbs, Samuel W., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Peterson, Cresson, & Stuart. (See Beesley & Delany, assignors.)			
	Peterson, R., & E. Braman. (See Braman & Peterson.)			

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14732	Petherick, Thomas.....	Coal breakers.....	April 22, 1856.....	XXII.
15950	Pettjean, Tony.....	Processes for silvering mirrors.....	Oct. 21, 1856.....	IV.
15388	Pettengill, C. S.....	Fire-arms, repeating.....	July 22, 1856.....	XIX.
14926	Pettenkofer, Max, and Carl Ruland.....	Gas generators, construction of.....	May 20, 1856.....	IV.
15017	Pettes, George W. (See Davis, Ari, Asahel Davis, & C. Cunningham.)			
14114	Peverly, R. H.....	Compasses, ships', self-registering.....	June 3, 1856.....	VIII.
15951	Pevey, Abiel.....	Iron scraps, remelting.....	Jan. 15, 1856.....	II.
14290	Pfaltz, Augustus.....	Soaps, rosin.....	Oct. 21, 1856.....	IV.
	Phelan, Michael.....	Billiard table cushions.....	Feb. 19, 1856.....	XXII.
	Phelps, Charles, and Geo. Ashman. (See Hayes, Augustus A., assignor.)			
15191	Phelps, Henry.....	Vehicles, running gear of.....	June 24, 1856.....	X.
16125	Phelps, Samuel W.....	Trunks, travelling.....	Nov. 25, 1856.....	XVI.
	Phelps, Sprague, Russell, & Foote. (See Foote, Alvah, assignor.)			
16187	Philips, William G.....	Gate, approach-opening.....	Dec. 9, 1856.....	IX.
14066	Phillips, Charles.....	Cars, dirt, machine for loading.....	Jan. 8, 1856.....	X.
14250	Phillips, Job.....	Harvesters, grain.....	Feb. 12, 1856.....	I.
15212	Phillips, John H., assignor to Leigh R. Holmead..	Breastpins, shield to protect.....	June 24, 1856.....	XV II.
15396	Phillips, L. D.....	Sub-marine exploring armors.....	Oct. 14, 1856.....	VII.
16021	Phillips, L. D.....	Trowels.....	Nov. 4, 1856.....	XV.
14733	Phillips, Nathan M.....	Scale, grain, electro-magnetic.....	April 22, 1856.....	XII.
14970	Phillips, Philetus.....	Musical notation.....	May 27, 1856.....	XVIII.
	Phillips, Thomas, Merrill, & Willey. (See Willey, John F., assignor.)			
14203	Phineas, Myer.....	Pens, metallic.....	Feb. 5, 1856.....	XVIII.
14408	Phleger, Leonard.....	Boilers, steam.....	Mar. 11, 1856.....	VI.
15983	Phyfe, John.....	Bleaching ivory apparatus.....	Oct. 28, 1856.....	IV.
14928	Pierce, George.....	Cooking apparatus.....	May 6, 1856.....	V.
15952	Pierce, Samuel.....	Stoves, cooking.....	Oct. 21, 1856.....	V.

823	Pierce, Samuel, and J. J. Duley, assignors to Fuller, Warren, & Morrison.	Stoves, cooking	Aug. 5, 1856.....	Design.
764	Pierce, Samuel, and J. J. Duley, assignors to Cox, Warren, Morrison, & Co.	Stoves, cooking	Feb. 12, 1856.....	Design.
822	Pierce, Samuel, and J. J. Duley, assignors to Fuller, Warren, & Morrison.	Stoves, parlor	Aug. 5, 1856.....	Design
766	Pierce, Samuel, and Sanford Burnam, assignors to Cox, Warren, & Morrison.	Stoves, cooking	Feb. 12, 1856.....	Design.
15524	Pierce, Warren S.....	Amalgamator, gold washer and	Aug. 12, 1856.....	II.
14573	Pierpont, Asahel.....	Soldering wire ferrules.....	April 1, 1856.....	II.
14971	Pilson, Robert, and Stephen P. Heath.....	Looms	May 27, 1856.....	III.
14633	Pine, Robert G.....	Buckles, polishing, machine for	April 8, 1856.....	II.
15996	Pingree, S. W.....	Tan liquor to hides, order of applying.....	Oct. 14, 1856.....	XVI.
15303	Pingree, Samuel W.....	Tanning hides.....	July 8, 1856.....	XVI.
	Pingree, T. P. (See Pratt, Elisha, assignor.)			
	Piper & Howe, assignors. (See Howe & Piper, assignors.)			
	Piper & Howe, assignors. (See Howe & Piper, assignors.)			
	Piper, W., and J. H. Darlington. (See Darlington & Piper.)			
14291	Pitman, Charles S.....	Axles to shafts, mode of applying.....	Feb. 19, 1856.....	X.
14882	Pitcock, George W., John B. Stott, and Galen Richmond.	Water-wheels, reacting.....	May 13, 1856.....	XI.
14165	Pitts, Joseph N.....	Paper stock, flocks and, machine for cutting	Jan. 29, 1856.....	III.
14591	Place, John A. (See Stowell, Abijah D.)			
15744	Plant, John, and Charles G. Ball.....	Ranges, cooking.....	April 8, 1856.....	V.
	Plant, Pascal.....	Saddles, riding.....	Sept. 16, 1856.....	XVI.
	Plantz, Higbee, and Babbitt. (See Babbitt, Higbee, and Plantz.)			
15493	Platt, Anson H.....	Door stay.....	Aug. 5, 1856.....	II.
14514	Platt, E., E. C. Blakeslee, and E. Jordan. (See Blakeslee, Platt, and Jordan.)	Bedsteads, wardrobe, combined with other furniture.	Mar. 25, 1856.....	XVII.
15084	Plimpton, H. R. & J. L.....	Harvesters, sickle bars of, attaching teeth to.....	June 10, 1856.....	I.
15146	Pluche, J. C. & L. C.....	Harvesters.....	June 17, 1856.....	I.
16039	Pluche, J. C. & L. C.....	Ores, &c., crushing rollers for.....	Nov. 4, 1856.....	II.
14144	Plumb, William Henry.....	Planters, seed.....	Jan. 22, 1856.....	I.
15934	Plummer, F.....	Alum making, preparing clay for.....	Oct. 21, 1856.....	IV.
	Pochin, Henry Davis.....			

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15953	Poileux, Joseph..... Pollak, M. (See Falkenau, M., M. Pollak, and S Wiener.)	Process of coating metals with metals.....	Oct. 21, 1856.....	IV.
15775	Pomeroy, N. W.....	Lubricator.....	Sept. 23, 1856.....	IV.
16105	Pombroy, Josiah B.....	Lumber feeding rollers, parallel yielding of, device for governing the.....	Nov. 18, 1856.....	XIV.
14166	Porter, Rufus.....	Punching machine.....	Jan. 29, 1856.....	II.
15085	Porter, Rufus.....	Signals, fog, mode of sounding whistles for.....	June 10, 1856.....	VII.
14469	Porter, Wm. M. (See Goodyear & Berry.)	Harness buckles.....	Mar. 18, 1856.....	XVI.
16098	Post, Stephen. (See Carlton, Thomas I.)	Cork, softening, by steam.....	Nov. 18, 1856.....	XXII.
15572	Potter, Bennett, Jr..... Potter, John..... Potter, Nathaniel. (See Baird, Daniel N., assignor.)	Tenoning machine.....	Aug. 19, 1856.....	XIV.
14827	Powers, D., A. E., and N. B. (See Glominski, Antoine, assignor.)	Iron, smelting, furnaces for.....	May 6, 1856.....	II.
14884	Powers, Thomas H.....	Pump, cattle.....	May 13, 1856.....	XI.
14883	Powers, Thomas H.....	Brooms and brushes.....	May 13, 1856.....	XVII.
14430	Pratt, Eliza, assignor to E. Pratt and H. P. Upton, assignors to Pratt and T. P. Pingree.	Leather splitting machines.....	Mar. 11, 1856.....	XVI.
14775	Pratt, Ephraim L.....	Apples, paring, machines for.....	April 29, 1856.....	XVII.
16067	Pratt, Ephraim L.....	Apples, slicing, machines for.....	Nov. 11, 1856.....	XVII.
16080	Pratt, Ephraim L., assignor to L. Harrington. Pratt, Julius, & Co. (See Breckenridge, A. C., assignor.)	Apples, potatoes, &c, machines for paring.....	Nov. 11, 1856.....	XVII.
14657	Pratt, Julius, & Co. (See Fuskett & Stedman, assignors.) Pratt, Randal.....	Rake, horse, hay.....	Jan. 8, 1856.....	I.

809	Pratt, Samuel F., assignor to W. & J. Treadwell, Perry, & Norton.	Stoves.....	June 24, 1856.....	Design.
834	Pratt, Samuel F., assignor to Treadwell, Perry, & Norton.	Stoves, oven.....	Sept. 23, 1856.....	Design.
833	Pratt, Samuel F., assignor to Treadwell, Perry, & Norton.	Stoves, parlor.....	Sept. 23, 1856.....	Design.
16036	Pratt, Wm. S., assignor to J. S. C. Thursby.....	Carpets, fabric for underlaying.....	Nov. 4, 1856.....	XVII.
14927	Price, E.....	Elevator for cotton, sugar-cane, &c.....	May 20, 1856.....	XII.
14641	Priestly, Thomas, assignor to Daniel Holden.....	Cans, oil.....	April 8, 1856.....	V.
14251	Prime, John.....	Compasses, ships'.....	Feb. 12, 1856.....	VIII.
14928	Proctor, Napoleon B.....	Bridge, draw, floating.....	May 20, 1856.....	IX.
15438	Prosser, T. T.....	Sawing-machine.....	July 29, 1856.....	XIV.
16090	Proust, P. E.....	Axles, car, and other journals, lubricating.....	Nov. 18, 1856.....	X.
15897	Provinces, William.....	Uterine supporters.....	Oct. 14, 1856.....	XX.
15936	Provost, Wm. F. and Charles J.....	Presses, cotton.....	Oct. 21, 1856.....	XII.
14698	Pruyne, George W.....	Leather straps, &c., machines for raising and creasing.....	April 15, 1856.....	XVI.
14929	Puffer, A. D.....	Gutta-percha, lining metal pipes with.....	May 20, 1856.....	IV.
16022	Pugh, Jonathan H., and Jacob J. Smith. (See Smith & Pugh.)	Cotton-gins.....	Nov. 4, 1856.....	III.
15895	Purdum, Wilson A.....	Washing-machines.....	Oct. 14, 1856.....	XVII.
16126	Purkey, Jacob.....	Cans and vessels, apparatus for exhausting air from, and hermetically sealing.....	Nov. 25, 1856.....	XVII.
14252	Pusey, Lea.....	Fires, method of extinguishing.....	Feb. 12, 1856.....	V.
16286	Pusey, Lea.....	Scales, railroad platform, arrangement of.....	Dec. 23, 1856.....	XII.
16186	Putnam, S. S.....	Iron, forging, machines for.....	Dec. 9, 1856.....	II.
15816	Pyle, Joseph.....	Leather, finishing, machines for.....	Sept. 30, 1856.....	XVI.
14368	Quantin, A.....	Gaseous pressure, method of bottling fluids under.....	Mar. 4, 1856.....	IV.
14735	Quigley, Alanson.....	Carriage tops, apparatus for raising and lowering.....	April 22, 1856.....	X.
150	Quigley, Alanson.....	Carriage tops, raising and lowering, apparatus for.....	Aug. 26, 1856.....	Add. imp't.
14900	Quimby, Samuel D., assignor to Edward A. Locke.	Bags, travelling, and mail pouches, frames for.....	May 13, 1856.....	XXII.
15575	Rains, H. A.....	Saddles, cart.....	Aug. 19, 1856.....	XVI.
342	Ralston, Andrew.....	Threshing and winnowing grain, machines for.....	Jan. 15, 1856.....	Reissue.
	Ralston, Andrew.....	Threshing and winnowing grain, machines for.....	Feb. 18, 1856.....	Extension.

15990	Read, J. A., G. Smith, and H. Brown. (See Smith, Brown, & Read.)	Projectiles for ordnance.....	Oct. 28, 1856.....	XIX
357	Read, J. A., G. Smith, and H. Brown. (See Smith, Brown, & Read.)	Reaping-machines.....	Mar. 11, 1856.....	Extension.
388	Read, J. A., G. Smith, and H. Brown, assignors to Hayward, Bartlett & Co. (See Smith, Brown, & Read, assignors.)	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
389	Read, John B.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
390	Read, Jonathan.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
391	Read, Jonathan.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
792	Read, Joseph A., assignor to John H. Cabill.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
	Read, Joseph A., H. Brown, and G. Smith. (See Smith, Brown, & Read.)	Oven and stove doors.....	May 13, 1856.....	Design.
15857	Read, Smith, & Brown, assignors to Cox, Hagar, & Cox. (See Smith, Brown, & Read, assignors.)	Sash-lock.....	Oct. 7, 1856.....	II.
14431	Redmond, O.....	Umbrella ribs, manufacturing.....	Mar. 11, 1856.....	XXI.
15251	Reed, Charles C., assignor to Charles C. Reed, W. S. Reinert, and J. Schnell.	Watches: independent seconds, movement for.....	July 1, 1856.....	VIII.
348	Reed, George P.....	Harvesting-machines.....	Jan. 29, 1856.....	Reissue.
14790	Reeves, Jonathan, and John C. Houermann. (See Houermann & Reeves.)	Harvester-fingers.....	April 29, 1856.....	I.
15252	Reilly, John.....	Reaping and mowing machines.....	July 1, 1856.....	I.
14079	Reilly, John, assignor to Heath, Dousman & Reilly.	Harvesters.....	Jan. 8, 1856.....	I.
15858	Reinhardt, Charles C.....	Truss-pads, glass or earthen.....	Oct. 7, 1856.....	XX.
	Reisinger, Graff & Graff. (See Vedder, N. S., assignor.)	Valve-motions for steam engines.....	Aug. 19, 1856.....	VI.
15576	Renwick, E. S. (See Comfort, Samuel, jr., assignor.)	Stoves, cooking.....	June 3, 1856.....	Design.
799	Renwick, Edward S.....	Stoves, cooking.....	June 3, 1856.....	Design.
800	Resor, Wm.....	Fence, field.....	Mar. 25, 1856.....	IX.
14518	Reynan, J. B.....	Engines, steam, variable cut-off for.....	Sept. 16, 1856.....	VI.
15745	Reynolds, Charles H.....			

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
16063	Reynolds, Ira.....	Washing-machines.....	Nov. 11, 1856.....	XVII.
14972	Reynolds, James.....	Gutta-percha, apparatus for cleaning.....	May 27, 1856.....	IV.
15046	Reynolds, James.....	Gutta-percha tubing, mandrels for making.....	June 10, 1856.....	IV.
15057	Reynolds, James.....	Gutta-percha, feed apparatus for working.....	June 10, 1856.....	IV.
15439	Reynolds, James.....	Gutta-percha, apparatus for covering wire.....	July 29, 1856.....	IV.
16215	Reynolds, James.....	Gutta-percha cord, making.....	Dec. 9, 1856.....	IV.
14292	Reynolds, Rensselaer.....	Looms, temples for.....	Feb. 19, 1856.....	III.
	Reynolds, William. (See Parker & Reynolds.)			
	Riblet, St. John, Burr & Wright. (See Wells, Henry A., assignor.)			
	Riblet, St. John, Burr, & Wright. (See Wright, Henry A., assignor.)			
	Rice, Charles. (See Whorf, S. H., assignor)			
	Rice, Charles. (See Whorf, S. H., and Charles Rice)			
	Rice, Henry, et al. (See Maycock, Thomas, assignor.)			
15304	Rice, Orrin.....	Saws, circular and other, method of grinding.....	July 8, 1856.....	XIV.
15344	Rich, John.....	Ploughs.....	July 15, 1856.....	I.
16189	Rich, Obadiah.....	Process of preparing tannate of lime.....	Dec. 9, 1856.....	IV.
	Rich, Reuben.....	Water-wheels.....	July 8, 1856.....	Extension.
14386	Richards, Samuel.....	Railroads, snow plough for.....	May 13, 1856.....	IX.
15018	Richards, Samuel.....	Furnaces, glass.....	June 3, 1856.....	V.
15359	Richards, Samuel.....	Furnaces, glass.....	July 22, 1856.....	V.
14574	Richardson, Calvin A.....	Beds, straw and husk, instrument for stirring.....	April 1, 1856.....	XVII.
	Richardson, Cox, & Boynton. (See Hathaway, David, assignor.)			
	Richardson, Cox, & Boynton. (See Vedder, N. S., assignor.)			
	Richardson, Cox, & Boynton. (See Vedder & Ripley, assignors.)			

14947	Richardson, Cox, & Boynton. (See Hathaway, David, assignor.)	Felloes, machine for manufacturing	May 27, 1856.....	XIV.
15253	Richardson, J. B. (See Davis, Ari, Asahel Davis, and C. Cunningham.)	Streets, sweeping, machine for	July 1, 1856.....	IX.
15254	Richmond, A. B.	Dough, making and kneading, machines for	July 1, 1856.....	XVII.
15707	Rickards, D. H.	Cartridges.....	Sept. 9, 1856.....	XIX.
	Ridgway, Socrates M.			
	Riedel, Julius.....			
	Rightor, W. E. (See Craig & Rightor.)			
15817	Rightor, W. R., and W. P. Craig. (See Craig, Waldo P., assignor)	Ships' blocks, sheave pin of, means for lubricating the.	Sept. 30, 1856.....	VII.
	Riley, John M.	Hubs to axles, mode of attaching.....	Sept. 30, 1856.....	X.
15818	Ripley, Ezra.....	Metals, casting	Jan. 15, 1856.....	II.
14115	Ripley, Ezra, and N. S. Vedder, assignors to Cox, Richardson, & Boynton. (See Vedder & Ripley, assignors.)			
	Ripley, E., & N. S. Vedder, assignors to Sweetland & Little. (See Vedder & Ripley, assignors.)			
14703	Risher, Thomas A., assignor to himself and J. K. Cooper.	Seeding machines.....	April 15, 1856.....	I.
16025	Roach, Thomas R.....			
16150	Robbins, E. Y.	Rakes, hay	Nov. 4, 1856.....	I.
15777	Robbins, Isaac I.	Baby-walker and jumper.....	Dec. 2, 1856.....	XVII.
	Roberts, C. (See Lyndall, J., assignor)	Rakes, hay	Sept. 23, 1856.....	I.
15255	Roberts, Cyrus	Mill, corn and cob.....	July 1, 1856.....	XIII.
14517	Roberts, Cyrus, and John Cox.....	Separators, grain.....	Mar. 25, 1856.....	I.
14899	Roberts, Milton, assignor to himself and Isaac N. Felch.	Lathes, cutter-head for.....	May 13, 1856.....	XIV.
14941	Roberts, Milton, assignor to himself, Isaac Roberts, and Isaac N. Felch.	Lathe arrangement for turning irregular forms.....	May 20, 1856.....	XIV.
14168	Robertson, H. G.....	Bee-hives.....	Jan. 29, 1856.....	I.
15107	Robertson, H. G.....	Collars, horse, machines for stuffing	June 10, 1856.....	XVI.
15620	Robertson, John.....	Pipe-lead, making	Aug. 26, 1856.....	II.
14324	Robertson, T. J. W.	Sewing-machine	Feb. 26, 1856.....	III.
343	Robertson, Thomas J. W., assignor to himself and A. E. Beach.	Sewing-machine	Jan. 15, 1856.....	III.
14253	Robertson, Wm. H., and George W. Simpson	Fire-arms, breech-loading.....	Feb. 12, 1856.....	XIX.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
14930	Robinson, John	Saws, reciprocating, method of hanging	May 20, 1856.	XIV.
15667	Robinson, John	Engines, steam, rotary	Sept. 2, 1856.	VI.
15668	Robinson, John	Candle-moulding machine	Sept. 2, 1856.	IV.
15820	Robinson, John	Locomotives for roads, &c	Sept. 30, 1856.	VI.
16024	Robinson, John	Pumps, chain	Nov. 4, 1856.	XI.
14736	Robinson, Asa P.	Pavements, cast-iron	April 22, 1856.	IX.
14032	Robinson, Charles, and Charles T. Chester	Electrical, automatic, circuit breakers	Jan. 1, 1856.	VIII.
15256	Robinson, Daniel	Gates, balance for flumes in water power	July 1, 1856.	XI.
15819	Robinson, George W. and E. B.	Vessels, steering apparatus for	Sept. 26, 1856.	Extension.
14829	Robinson, L.	Cultivators	Sept. 30, 1856.	I.
	Robinson, N. W.	Barrel-heads, machine for manufacturing	May 6, 1856.	XIV.
15794	Roby, James. (See Pease, Henry, assignor.)	Boat-oars	Sept. 23, 1856.	VII.
15390	Rockwood, Aaron W. (See Barden, J. S., assignor.)	Scaffold for shingling roofs	July 22, 1856.	IX.
14470	Rodefer, J. W.	Omnibus-registers	Mar. 18, 1856.	X.
14575	Rodgers, James	Forge-fires	April 1, 1856.	II.
14293	Rodgers, Wm., and Abraham Bannon	Peasaries, construction of	Feb. 19, 1856.	XX.
15778	Roeder, F.	Brick-press, hydraulic	Sept. 23, 1856.	XV.
15823	Rogers, Ethan	Bridges	Sept. 30, 1856.	IX.
16190	Rogers, J.	Washing-machines	Dec. 9, 1856.	XVII.
15019	Roland, Isaac S.	Melodeons	June 3, 1856.	XVIII.
14409	Rollins, Josiah A.	Harvesters, grain and grass	Mar. 11, 1856.	I.
14777	Roney, B. T.	Harvester-cutters	April 29, 1856.	I.
	Roney, Benj. T.			
	Root, Elisha K. (See Dickerson, Edward N.)			
14779	Root, John B.	Engines, steam, rotary	April 29, 1856.	VI.
	Root, Marcus A., and Giles Langdell. (See Langdell & Root.)			
14169	Root, Riley, and Samuel G. Holyoke	Railroad-tracks, machine for clearing snow from	Jan. 29, 1856.	X.
16026	Roper, S. H.	Sewing-machines	Nov. 4, 1856.	III.
14834	Rose, John	Composition for stuffing leather	May 6, 1856.	IV.
14831	Rosencrantz, E. D.	Wagons, extension	May 6, 1856.	X.

14146	Ross, James F.	Valves, steam, in blower engines, means for operating the.	Jan.	22, 1856.	VI.
14973	Ross, John Gerard.	Propellers, hand.	May	27, 1856.	VII.
16100	Roth, Julius A.	Bleaching process	Nov.	18, 1856.	IV.
	Rotherwel, Lewis, <i>et al.</i> (See Martin, James W., assignor.)				
14779	Rowe, Bradford.	Wrench	April	29, 1856.	II.
14519	Rowe, James	Fences, field, portable.	Mar.	25, 1856.	IX.
	Rowe, J., A. Frear, and William Van Arden. (See Van Arden, William, assignor)				
15779	Royce, J. A.	Chimney-tops, self-regulating draught for.	Sept.	23, 1856.	V.
15441	Ruger, Nelson.	Wood, carving, certain improved devices in.	July	23, 1856.	XIV.
	Ruggles, Frederick A., <i>et al.</i> (See Hathaway, Anson S., assignor.)				
15440	Ruggles, S. W.	Detector, pickpocket.	July	29, 1856.	XXII.
14830	Ruggles, Solomon W.	Stumps, extracting, machine for.	May	6, 1856.	IX.
16257	Ruggles, Solomon W., assignor to Silas Ruggles.	Wind-mills	Dec.	16, 1856.	XI.
	Ruland, Carl, and Max Pettenkofer. (See Pettenkofer & Ruland.)				
15088	Russell, Andrew J. (See Galentine & Russell.)	Cans, preserve, hermetically sealing	June	10, 1856.	XVII.
15089	Russell, Charles E.	Fire-engines, method of applying horse-power to.	June	10, 1856.	V.
15574	Russell, David	Stamp, hand	Aug.	19, 1856.	XVIII.
	Russell, Edwin A.				
14410	Russell, E. P. (See Hoff, C. C., assignor.)	Straw-cutters	Mar.	11, 1856.	I.
15708	Russell, Edwin P.	Lock	Sept.	9, 1856.	II.
	Russell, Henry D.				
	Russell, Shroder, & Anderson. (See Shroder, Richard, assignor.)				
	Russell, Sprague, Phelps, & Foote. (See Foote, Alvah, assignor.)				
15725	Saladee, C. W.	Carriage-tops, mode of adjusting.	Sept.	9, 1856.	X.
15345	Saladee, Cyrus W.	Carriage, pleasure, three-wheeled.	July	15, 1856.	X.
	Salawski, Shroeder, & Schmidt. (See Shroeder, Salewski, & Schmidt.)				
15196	Salisbury, H. E.	Forms, tapering, method of turning	June	24, 1856.	XIV.
	Salisbury Manufacturing Company. (See Derby, John P., assignor.)				
15391	Salomon, John C., Fr.	Liquids used as a motive-power	July	22, 1856.	IV.
15392	Salomon, John C., Fr., and George E. Cooper	Saddles, riding	July	22, 1856.	XVI.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16302	Sampson, E., assignor to the Vergennes Scale Manufacturing Company.	Scale, weighing.....	Dec. 23, 1856.....	XII.
14520	Sampson, Junius M.....	Post-driver.....	Mar. 25, 1856.....	IX.
15022	Samuels, William, and Geo. L. Stansbury.....	Boring machines.....	June 3, 1856.....	XIV.
15821	Sanborn, S. T. (See Davis, Ari, Asabel Davis, and C. Cunningham)			
	Sanders, Benjamin D.....	Candles, many-wicked.....	Sept. 30, 1856.....	IV.
791	Sanders, Wolfe, & Warren. (See Sanderson, W. L., and N. S. Vedder, assignors.) Sanders, Wolfe, & Warren. Sanderson, W. L., and N. S. Vedder. (See Vedder & Sanderson, assignors.) Sanderson, W. L., and N. S. Vedder, assignors to Swetland & Little. (See Vedder & Sanderson.) Sanderson, W. L., and N. S. Vedder, assignors to Swetland & Little. (See Vedder & Sanderson.) Sanderson, W. L., and N. S. Vedder, assignors to Swetland & Little. (See Vedder & Sanderson.) Sanderson & Vedder, assignors. (See Vedder & Sanderson.) Sanderson & Vedder, assignors to North, Chase, & North. (See Vedder & Sanderson.) Sanderson & Vedder, assignors to Eddy. (See Vedder & Sanderson.) Sanderson & Vedder, assignors to North, Chase, & North. (See Vedder & Sanderson, assignors.)	Stoves, cooking, plates of.....	Ma 13, 1856.....	Design.
14411	Sands, Job..... Sands, John. (See Hunt & Sands.)	Kilns, lime.....	Mar. 11, 1856.....	XV.

14992	Sands, Thomas, assignor to Thomas Sands and John P. Lindsay.	Organs, parlor	May 27, 1856.....	XVIII
14127	Sanford, G. T., Hull, and S. Hull	Harvesters, grain and grass.....	Jan. 15, 1856.....	I.
15147	Sanford, N. C.	Auger handles	June 17, 1856.....	II.
16250	Sanson, John S., & Wm. P. Farrand	Metallic slats for blinds, machine for making.	Dec. 16, 1856.....	II.
16221	Sargent, Charles G., and Abram Keach, assignors to Abram Keach and Caleb M. Marvel.	Printing presses.....	Dec. 9, 1856.....	XVIII.
14369	Sargent, Prentice	Lamps for burning rosin oil.....	Mar. 4, 1856.....	V.
14931	Sarven, James D.	Carrriage shaft coupling.....	May 20, 1856.....	X.
15527	Satterlee, L. R.	Inkstands to desks, mode of attaching	Aug. 12, 1856.....	XVIII.
16069	Sault, T.	India rubber, process of cleaning.....	Nov. 11, 1856.....	IV.
16153	Saunders, Miner, & Stevens. (See Miner, Stevens, & Saunders.)			
14068	Saunders, Wm. H.	Axle box.....	Dec. 2, 1856.....	X.
136	Savage, J. J.	Excavating machines	Jan. 8, 1856.....	IX.
15984	Savage, J. J.	Excavating machines	Mar. 11, 1856.....	Add'l Imp't.
14412	Savary, Richard	Stoves and furnaces.....	Oct. 28, 1856.....	V.
14642	Sawyer, Jno., assignor to himself and Thomas Hale.	Iron, puddling	Mar. 11, 1856.....	II.
15780	Sawyer, J. & S.	Heating and ventilating buildings, apparatus for....	April 8, 1856.....	V.
14833	Sawyer, Joseph, and Sylvester	Hoop machine	Sept. 23, 1856.....	XIV.
14254	Sayre, C. H., and G. Klinck.....	Hoop machine	May 6, 1856.....	XIV.
15954	Schaffier, John.....	Cultivator teeth.....	Feb. 12, 1856.....	I.
16070	Scharffe, Gustave.....	Boats, steam, capatans for.....	Oct. 21, 1856.....	VII.
14338	Scheitlin, Jacob, assignor to J. Scheitlin and O. A. Dailey.	Fire-arms, breech-loading.....	Nov. 11, 1856.....	XIX.
15669	Schelly, J. Y., and J. Stauffer, assignors to Wm. Watson.	Valves of steam engines, operating the, arrangement of means for.	Feb. 26, 1856.....	VI.
15197	Schlickeyson, Carl F.	Harvesting machines.....	Sept. 2, 1856.....	I.
14434	Schmidt, Charles	Clay, mixing, pug-mill for.....	June 24, 1856.....	XV.
15361	Schmidt, Friedrich E.	Wheels, carriage, method of boxing	Mar. 11, 1856.....	X.
15577	Schmidt, William. (See Schroeder, H., L. Salski, and Wm. Schmidt.)	Dye-stuff, vegetable, preparing a	July 15, 1856.....	IV.
14537	Schnell, J. (See Reed, Charles C., assignor.)			
14296	Scholfield, N.	Projectiles.....	Aug. 19, 1856.....	XIX.
	Schooley, John C. (See Fairbanks, Thaddeus, assignor.)			
	Schrag, Philip.....	Vessels, pots, &c., earthen, mould for.....	Mar. 25, 1856.....	XV.
	Schrag, Philip, and W. J. Von Kaemerhueber	Marble in obelisk form, machines for sawing	Feb. 19, 1856.....	XV.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
15900	Schroder, Charles.....	Bed bottoms, spring.....	Oct. 14, 1856.....	XVII.
16283	Schroeder, H., L. Salewski, and Wm. Schmidt	Fire-arms, breech-loading.....	Dec. 23, 1856.....	XIX.
14370	Schuh, Geo., and Phineas L. Slayton	Boots and shoes, pegging, machines for.....	Mar. 4, 1856.....	XVI.
14471	Schultz, C. A.....	Marble in taper form, machine for sawing.....	Mar. 18, 1856.....	XV.
14472	Schwager, John A. (See Reld, L., assignor.)	Wood, designs on, mode of producing	Mar. 18, 1856.....	XIV.
	Schwickardt, Philip			
	Scott, Isaac, and E. P. Fitch. (See Kern, James M., assignor.)			
	Scott, Isaac, and E. P. Fitch. (See Kern, James M., assignor.)			
	Scott & Sirret. (See Sirret & Scott.)			
16132	Scotton, S.	Ice-saw	Dec. 2, 1856.....	XXII.
15148	Seroggs, John A. (See Guard, C. H., assignor.)	Apples, paring machine for.....	June 17, 1856.....	XVII.
15822	Seagrave, J. D.....	Planters, seed.....	Sept. 30, 1856.....	I.
15225	Seaman, John F.....	Boiler, steam, grates	Sept. 30, 1856.....	VI.
14473	Searles, A. M.....	Rods, connecting, adjusting the brasses of.....	Mar. 18, 1856.....	XIII.
14576	Sees, John R.....	Pump, feeding, method of varying the stroke of, for steam-engines.....	April 1, 1856.....	XI.
15494	Sees, John R.....	Boilers, steam, heating feed-water apparatus for	Aug. 5, 1856.....	VI.
16071	Sees, John R.....	Locomotive engines, heating feed-water of, arrangement for.....	Nov. 11, 1856.....	VI.
14255	Seithen, John.....	Bottles, envelopes for.....	Feb. 12, 1856.....	XXII.
15670	Selby, N. N.....	Whistle-tree for detaching horses from carriages.....	Sept. 2, 1856.....	X.
14836	Selpho, William.....	Legs, artificial, construction of.....	May 6, 1856.....	XX.
15364	Senor, Jos. W. (See Waite & Senor.)	Lamps, lard.....	July 15, 1856.....	V.
	Senseny, Jeremiah S., assignor to himself and G. H. Merklein.....			
14363	Seropyan, C. D.....	Bank notes, &c., from being counterfeited, method of preventing.....	Jan. 8, 1856.....	XVIII.
15578	Sessions, Francis E.....	Window-sash.....	Aug. 19, 1856.....	IX.
14387	Seymour, Frederick J.....	Kettles, brass, making	May 13, 1856.....	II.

15305	Seymour, Frederick J.	Lamps, locomotive reflector	July 8, 1856	V.
377	Seymour, P.	Sowing machines	July 15, 1856	Reissue.
16252	Seymour, Wm. H., assignor to Seymour & Morgan.	Harvesting-machines, finger-bar for	Dec. 16, 1856	I.
15721	Seymour, W. H. and H. Pease, assignors to Seymour & Morgan.			
15624	Seymour, W. H., and H. Pease, assignors to W. H. Seymour and Dayton S. Morgan.	Ships and other vessels, bilge and leakage water indicator for.	Aug. 26, 1856	VII.
15149	Shanda, Jos. G.	Paddle-wheels, feathering	June 10, 1856	VII.
15782	Shannon, Sinclair.	Lanterns	Sept. 23, 1856	V.
14699	Shapter, John S.	Engines, steam, cut-offs for	April 15, 1856	VI.
15759	Shapter, John S.	Boiler, steam cylinder within the, arrangement of.	Aug. 19, 1856	VI.
14116	Sharp, Samuel T.	Straw-cutters	Jan. 15, 1856	I.
14413	Sharp, Theodore	Saws, mulley, method of straining.	Mar. 11, 1856	XIV.
16072	Sharps, C.	Guns, breech-loading	Nov. 11, 1856	XIX.
15781	Shattuck, A. D.	Carding engines	Sept. 23, 1856	III.
15784	Shattuck, A. D.	Carding engines	Sept. 23, 1856	III.
16193	Shaw, Charles A.	Churns	Dec. 9, 1856	I.
14170	Shaw, Henry F.	Jackscrow	Jan. 29, 1856	XII.
15834	Shaw, Henry F., assignor to H. F. & G. F. Shaw.	Valves, regulating, for steam-engines	Sept. 23, 1856	VI.
15150	Shaw, James	Portfolio	June 17, 1856	XVIII.
15532	Shaw, Jerome B.	Glass, method of lettering and ornamenting.	Aug. 12, 1856	XVIII.
14325	Shaw, Wm. F.	Gas, heating by, apparatus for.	Feb. 26, 1856	V.
14414	Shaw, Wm. F.	Gas, heating and cooking by, apparatus for.	Mar. 11, 1856	V.
14737	Shaw, Wm. F.	Gas-burners	April 22, 1856	V.
149	Shaw, Wm. F.	Gas heater	July 22, 1856	Add'l imp't.
15531	Shaw, Wm. F.	India-rubber, treating	Aug. 12, 1856	IV.
407	Shaw, Wm. F.	Gas, heating by, apparatus for.	Oct. 28, 1856	Reissue.
16031	Shaw, Wm. F.	Gas, heating or cooking by, apparatus for.	Nov. 4, 1856	V.
1596	Sheldon, Chandler, & Moore. (See Moore, Chas., assignor.)			
14739	Sheldon & Smith. (See Smith, Harvey, and F. A. Sheldon.)			
818	Shepard, Edward C.	Electro-magnetic machines	Aug. 19, 1856	VIII.
15580	Shepard, Samuel R., and Orson W. Stow.	Metal, sheet, working in	April 22, 1856	II.
16314	Shepherd, J. & R.	Clock-fronts	July 29, 1856	Design.
	Shepler, John S.	Washing-machine	Aug. 19, 1856	XVII.
	Sherman, N. C., and J. Mason.	Planters, seed	Dec. 23, 1856	I.

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No.	Name of patentee.	Invention or discovery.	Date.	Class.
374	Sherman, S. I.	Levels, spirit, mounting	July 1, 1856.	Reissue.
16292	Sherman, Sylvester I.	Truss-pads	Dec. 23, 1856.	XX.
15747	Sherwin, P. O.	Shingle-machine	Sept. 16, 1856.	XIV.
14474	Sherwood, John P.	Nail-plate feeding machines	Mar. 18, 1856.	II.
401	Sherwood, John P.	Locks, door	Dec. 15, 1856.	Extension.
	Sherwood, John P., assignor to Calvin Adams, assignor to J. P. Sherwood.	Locks, door	Oct. 7, 1856.	Reissue.
15746	Shields, B. G.	Cotton-pickers	Sept. 16, 1856.	I.
15955	Shireman, J. H.	Planters, seed	Oct. 21, 1856.	I.
405	Shirley, Daniel H.	Plan-oforte action	Oct. 21, 1856.	Reissue.
14256	Shoenberger, Edwin F.	Coupling safety-spring	Feb. 12, 1856.	X.
15495	Shopland, John	Stove, cooking, combined steam and hot-air	Aug. 5, 1856.	V.
15528	Shopland, John	Window-sashes, spring-pulleys for	Aug. 12, 1856.	IX.
15463	Shorey, John C., assignor to himself and A. J. Webster.	Water-wheels, gates for, method of operating	July 29, 1856.	XI.
15306	Short, Sewall	Horse-shoes	July 9, 1856.	II.
16255	Shroder, Richard, assignor to J. L. Russell, R. Shroder, and A. Anderson.	Oil, coal, apparatus for	Dec. 16, 1856.	IV.
14257	Shunk, Christian	Furnaces, blast, fluxing	Feb. 12, 1856.	II.
14740	Sibley, H. H.	Tent, conical	April 22, 1856.	XXII.
14739	Sibley, L. D.	Emissions, nocturnal, rings to prevent	April 22, 1856.	XX.
15346	Siemers, J. G.	Mill-stones, adjustment of	July 15, 1856.	XIII.
15435	Sigourney, John M.	Wheels, railroad car, cast-iron	Oct. 21, 1856.	X.
	Siller, Henry J. (See Fox & Siller.)			
	Silver, Dole, & Felch. (See Dole, L. A., assignor.)			
15257	Silver, Wm., jr.	Blasting powder	July 1, 1856.	IX.
14371	Simms, B. F., and Arthur Barbario. (See Barbario & Simms.)	Hubs to axles, mode of attaching	Mar. 4, 1856.	X.
15795	Simonds, Horace B.	Belt-punch	Sept. 23, 1856.	XII.
	Simpson, A., assignor to S. H. F. Bingham.			

14475	Simpson, George W. (See Robertson, W. H., and G. W. Simpson.)	Sewing-machines.....	Mar. 18, 1856.....	III.
15020	Singer, Isaac M.....	Sewing-machines, for binding hats.....	June 3, 1856.....	III.
16030	Singer, Isaac M.....	Sewing-machines.....	Nov. 4, 1856.....	III.
14741	Singer, I. M., and Edward Clark. (See Greenough, J. J., assignor.)	Lanterns, lamps to. method of fastening.....	April 22, 1856.....	V.
14577	Sirret, Emile, and Wm. H. Scott.....	Wheelwright machine.....	April 1, 1856.....	XIV.
15901	Sitton, John.....	Wheelwrights' machine.....	Oct. 14, 1856.....	XIV.
16290	Skells, Levi.....	Shears, tinners'.....	Dec. 23, 1856.....	II.
	Skinner, Halcyon, & Alex. Smith. (See Smith & Skinner.)			
15671	Slade, William.....	Buckle for wearing apparel.....	Sept. 2, 1856.....	XXI.
15783	Slaight, Thomas.....	Lock for freight cars.....	Sept. 23, 1856.....	II.
15581	Slaughter, Wm. B.....	Cars, railroad, head-rest to be used in.....	Aug. 19, 1856.....	X.
15622	Slayton, Nelson B.....	Pen, fountain.....	Aug. 26, 1856.....	XVIII.
14022	Slayton, P. L.....	Sewing-machines.....	Jan. 1, 1856.....	III.
	Slayton, Phineas L. (See Schuh, George, and P. L. Slayton.)			
14835	Sloan, Thomas.....	Boilers, steam-heating, feed-water apparatus for.....	May 6, 1856.....	VI.
	Slocum & Watkinson. (See Halvorson, Halvor, assignor.)			
14373	Smith, Aaron and Thomas S.....	Plows, gang.....	Mar. 4, 1856.....	I.
15529	Smith, A. B., and Wm. Weaver.....	Projectiles, throwing, machine for.....	Aug. 12, 1856.....	XIX.
15937	Smith, Abbey S.....	Music, instrumental, scale for.....	Oct. 21, 1856.....	XVIII.
16037	Smith, Alexander, and Halcyon Skinner.....	Looms, power.....	Nov. 11, 1856.....	III.
14415	Smith, Alfred E.....	Axles, boxes for.....	Mar. 11, 1856.....	X.
16294	Smith, Alfred E.....	Axletrees, mode of connecting shafts with.....	Dec. 23, 1856.....	X.
	Smith, Atkins. (See Lavender, Wm. R.)			
15393	Smith, Augustus B. (See Mallett & Smith.)	Match, friction, machine.....	July 22, 1856.....	XVII.
14326	Smith, Calvin D., and Horace Patterson.....	Door-spring.....	Feb. 26, 1856.....	II.
16165	Smith, David G.....	Ships, steering apparatus for.....	Dec. 2, 1856.....	VII.
16251	Smith, David W.....	Reaping and mowing machines.....	Dec. 16, 1856.....	I.
15530	Smith, Daniel C.....	Chairs, manufacturing.....	Aug. 12, 1856.....	XIV.
849	Smith, Edward Q.....	Stoves, parlor.....	Nov. 11, 1856.....	Design.
854	Smith, Elihu.....	Stoves, cooking.....	Dec. 23, 1856.....	Design.
	Smith, Garretson, and H. Brown.....			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
803	Smith, Garretton, and Henry Brown, assignors to J. G. Abbott and A. Lawrence.	Stoves, air-tight	June 17, 1856.....	Design.
756	Smith, G., H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, cooking.....	Jan. 22, 1856.....	Design.
802	Smith, G., H. Brown, and Jos. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, cooking.....	June 17, 1856.....	Design.
804	Smith, G., H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, nine-plate.....	June 17, 1856.....	Design.
805	Smith, G., H. Brown, and Jos. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves	June 17, 1856.....	Design.
757	Smith, G., H. Brown, and J. A. Read, assignors to A. E. Warfield.	Furnaces, portable	Jan. 22, 1856.....	Design.
758	Smith, G., H. Brown, and J. A. Read, assignors to A. E. Warfield.	Ranges, portable	Jan. 22, 1856.....	Design.
830	Smith, G., H. Brown, and J. A. Read, assignors to Cox, Hagar, & Cox.	Stoves	Sept. 16, 1856.....	Design.
844	Smith, G., H. Brown, and J. A. Read, assignors to Hayward, Bartlett, & Co.	Stoves.....	Oct. 7, 1856.....	Design.
811	Smith, Garretton, Henry Brown, and Joseph A. Read, assignors to Leibrant, McDowell, & Co.	Stoves, cooking	June 24, 1856.....	Design.
15496	Smith, Gilbert.....	Fire arms, breech-loading.....	Aug. 5, 1856.....	XIX.
15785	Smith, H. E.....	Grain-separators	Sept. 23, 1856.....	XIII.
16191	Smith, Hamilton E.....	Corn-shellers	Dec. 9, 1856.....	I.
785	Smith, Harvey, and Frederick A. Sheldon.....	Stove-plates	April 22, 1856.....	Design.
14620	Smith, H. H.....	Valve, governor, for steam engines.....	April 8, 1856.....	VI.
14372	Smith, Hiram.....	Pumps, air, escapes for.....	Mar. 4, 1856.....	XI.
14300	Smith, H. L., assignor to Wm. Neff and Peter Neff, jr.	Photographic pictures on japanned surfaces	Feb. 19, 1856.....	XVIII.
14147	Smith, Horace, and Daniel B. Wesson, assignor to the Volcanic Repeating Arms Co.	Fire-arms, cartridges of, primers for	Jan. 22, 1856.....	XIX.
15621	Smith, Jacob J., and Jonathan H. Pugh..... Smith, James. (See Henry Remey, assignor)	Bedsteads	Aug. 26, 1856.....	XVII.

16166	Smith, James, jr.	Dec. 2, 1856	II.
14374	Smith, Jeremiah P.	Mar. 4, 1856	I.
16127	Smith, Jeremiah P.	Nov. 25, 1856	I.
16028	Smith, Joel	Nov. 4, 1856	III.
14034	Smith, John C.	Jan. 1, 1856	XIX.
16029	Smith, John C.	Nov. 4, 1856	III.
14294	Smith, Joseph	Feb. 19, 1856	X.
15046	Smith, Joseph	June 3, 1856	I.
381	Smith, Joseph	July 22, 1856	Reissue.
156	Smith, Joseph	Dec. 16, 1856	Add'l impt.
16192	Smith, Lemuel	Dec. 9, 1856	XIV.
359	Smith, L. S., assignor to B. Howard	Mar. 11, 1856	Reissue.
15625	Smith, Marvin	Aug. 26, 1856	XVII.
15444	Smith, Miron	July 29, 1856	I.
15711	Smith, R.	Sept. 9, 1856	XVII.
	Smith, R. M. (See Leeds, L. W.)		
15710	Smith, Robert A.	Sept. 9, 1856	IX.
14742	Smith, Thomas	April 22, 1856	XIX.
14834	Smith, Willard H.	May 6, 1856	II.
15985	Smith, William H.	Oct. 25, 1856	I.
14587	Smith, Wooster	April 1, 1856	XXII.
14206	Snider, John S.	Feb. 5, 1856	XIV.
14635	Snow, Martin	April 8, 1856	XIV.
14073	Snyder, John G.	Jan. 8, 1856	I.
15195	Soule, Charles R.	June 24, 1856	II.
15347	Soule, George H.	July 15, 1856	XIX.
	Soules, Isaac, and John Case. (See Case & Soules.)		
14297	Southwick, Mass Branch	Feb. 19, 1856	XVII.
14417	Soverel, Matthias	Mar. 11, 1856	X.
14578	Spalding, Henry C.	April 1, 1856	XIV.
	Sparks, Joseph, and James D. and J. M. Jeffers. (See Jeffers and Sparks and Jeffers.)		
15348	Speed, John J., jr., and John A. Bailey	July 15, 1856	II.
14744	Speer, Alfred	April 22, 1856	IX.
16206	Spence, G. O.	Dec. 23, 1856	XVIII.
14743	Spence, George S. G.	April 22, 1856	V.
	Metallio tubes, casting		
	Corn-shellers		
	Corn, shelling, disk for		
	Spinning, throstle, machine		
	Fire-arms, repeating, and magazine		
	Weaving long warps		
	Hubs for carriages		
	Raking and loading hay, machine for		
	Raking and loading hay, machine for		
	Hubs for carriages		
	Lathes for irregular forms		
	Match-splints, machinery for splitting		
	Apple parers		
	Yokes, ox		
	Washing-machine		
	Streets, sweeping, machine for		
	Fire-arms, projectiles for		
	Door-fastener		
	Husking corn, machine for		
	Fishing-leads		
	Saw-mills		
	Spoke-shave		
	Seeding machines		
	Teeth, rake, machine for making		
	Fire-arms		
	Vegetables, for preservation, machines for preparing		
	Axles, thills to, mode of securing		
	Lathe		
	Metal tubes, seamless, making		
	Windows, &c., weather strip and lock for		
	Melodeons		
	Heating boilers, steam-pressure regulating apparatus for		

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NO.	NAME OF PATENTEE.	INVENTION OR DISCOVERY.	DATE.	CLASS.
14521	Spencer, Albert..... Spencer, Albert, and A. E. Laing. (See Emmons, Phineas, assignor.)	Hat bodies, machines for sizing	Mar. 25, 1856.....	III.
15786	Spencer, Isaac S.....	Threshing, grain, machine	Sept. 23, 1856.....	I.
15859	Spofford, Charles	Forms, irregular, machine for cutting	Oct. 7, 1856.....	XIV.
15497	Spooner, D. B., & H. B.....	Photographic pictures on glass, mode of coloring	Aug. 5, 1856.....	XVIII.
15021	Spooner, Lysander	Chairs and other articles, elastic bottoms for.....	June 3, 1856.....	XVII.
14674	Sprague, Alexander McD.....	Furnaces with fuel, apparatus for feeding.....	April 15, 1856.....	V.
15533	Sprague, Andrew..... Sprague, Russell, Phelps, & Foote. (See Foote, Alvah, assignor.)	Harvesters, corn	Aug. 12, 1856.....	I.
14376	Squarza, Vincenzo	Candle dipping machines.....	Mar. 4, 1856.....	IV.
16318	Squire, John J.....	Rakes, hay	Dec. 23, 1856.....	I.
14214	Standing, John, assignor to himself and James Baxendale. Stanley, C. H. (See Surgey, assignor to Stanley.) Stansbury, Geo. L. (See Samuels & Stansbury.) Stansbury, Geo. L. (See Samuels & Stansbury.) Stanton, John M. and Simon F., et. al. (See Glines, H. M.)	Printing machines, calico, movement for the doctors of.	Feb. 5, 1856.....	XVIII.
14780	Stanton, Simon F.....	Fire-arms, breech-loading.....	April 29, 1856.....	XIX.
15623	Stanton, Simon F., assignor to J. M. and S. F. Stanton.	Seine needles, filling, machinery for	Aug. 26, 1856.....	III.
14522	Staples, Solon	Clamp for planking ships.....	Mar. 25, 1856.....	XIV.
15442	Starbuck, G. H., and L. D. Gilman.....	Smut machine.....	July 29, 1856.....	XIII.
14118	Starr, Eben T.....	Fire-arms, revolving	Jan. 15, 1856.....	XIX.
14295	Starrett, James F.....	Printing from engraved plates, machine for.....	Feb. 19, 1856.....	XVIII.
14888	Starrett, John, and N. J. Wier.....	Stoves, gas.....	May 13, 1856.....	V.
16293	Staufen, Werner.....	Fibres, vegetable, preparing, for stuffing mattresses and cushions.	Dec. 23, 1856.....	III.

14700	Stauffer, J., and J. Y. Schelly, assignors to Wm. Watson. (See Schelly & Stauffer.)	Saw mills, head and tail blocks for.....	April 15, 1856.....	XIV.
14416	Stearns, E. H.....	Boring and mortising machine.....	Mar. 11, 1856.....	XIV.
14418	Stedman, Benjamin S., and Wm. Fosket (See Fosket & Stedman.)			
14375	Steers, Abraham.....	Extracts, apparatus for making.....	Mar. 11, 1856.....	IV.
15258	Steers, Abraham.....	Tanning apparatus.....	Mar. 4, 1856.....	XVI.
14580	Stephens, James.....	Curtain fixtures.....	July 1, 1856.....	XVII.
16073	Stephens, William.....	Valve gear of oscillating engines.....	April 1, 1856.....	VI.
15619	Sterling, W. G.....	Gas-regulator.....	Nov. 11, 1856.....	V.
14745	Stetson, Alva M.....	Amalgamator.....	Aug. 26, 1856.....	II.
16291	Stevens, A. H.....	Corn-shellers.....	April 22, 1856.....	I.
16101	Stevens, Edgar M., assignor to E. Townsend	Corn-shellers.....	Dec. 23, 1856.....	I.
	Stevens, G. H.....	Boring and mortising machine.....	Nov. 11, 1856.....	XIV.
	Stevens, Miner, & Saunders. (See Miner, Stevens, & Saunders.)			
15269	Stevens, Oliver P.....	Hulling and scouring grain, seed, &c., machines for.....	July 1, 1856.....	I.
14419	Stevens, Robert L.....	Valves of steam engines, slide, means for reducing the friction of.....	Mar. 11, 1856.....	VI.
14974	Stevenson, William J.....	Preserve vessels, self-sealing.....	May 27, 1856.....	XVII.
15395	Stever, J.....	Ships, pendulum pumps for, arrangement of means in.....	July 22, 1856.....	VII.
15260	Stewart, J. A.....	Planters, cotton seed.....	July 1, 1856.....	I.
15199	Stewart, John, and William H. Tristler. (See Tristler & Stewart)	Washing-machines.....	June 24, 1856.....	XVII.
14523	Stigleman & Ogborn. (See Taylor, George, assignor.)	Boilers, steam.....	Mar. 25, 1856.....	VI.
14837	Stillman, O. M., and Stephen Wilcox, jr.....	Sowing seed broadcast, machines for.....	May 6, 1856.....	I.
	Stillman, Samuel N. (See Bevin, Julius)			
	Stimson, Enos.....			
	St. John, Burr, Wright, & Riblet. (See Wells, Henry A., assignor.)			
	St. John, Burr, Wright, & Riblet. (See Wells, Henry A., assignor)			
15709	St. John, John R.....	Wind-mills.....	Sept. 9, 1856.....	XI.
16252	St. John, Thaddeus F.....	Wiring blind rods, machine for.....	Dec. 16, 1856.....	II.
16075	St. John, William F.....	Gas retort fastening, coppering.....	Nov. 11, 1856.....	IV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15824	Stocker, Amos.....	Tailors' measures.....	Sept. 30, 1856.....	XXI.
15672	Stoddard, O.....	Harvesters, grain and grass.....	Sept. 2, 1856.....	I.
15047	Stoddard, Oren.....	Husking corn, machines for.....	June 3, 1856.....	I.
14071	Stoddard, William.....	Mortising machines.....	Jan. 8, 1856.....	XIV.
15788	Stone, Amasa.....	Bottles and other vessels made from plastic substances, tool for forming grooves around the orifice of.....	Sept. 23, 1856.....	XXII.
14070	Stone, Gustavus.....	Mowing machines, blades of.....	Jan. 8, 1856.....	I.
16151	Stone, Harley, and Mason D. Cole.....	Tap, expanding.....	Dec. 2, 1856.....	II.
14420	Storm, Wm. Mt.....	Fire-arms, revolving.....	Mar. 11, 1856.....	XIX.
15090	Storm, Wm. Montgomery.....	Ships and other vessels, safes for.....	June 10, 1856.....	VII.
15259	Storm, William M.....	Steam-pressure indicators and regulators.....	July 1, 1856.....	VI.
15307	Storm, Wm. Mt.....	Fire-arms, breech-loading.....	July 8, 1856.....	XIX.
	Stott, Pittock, & Richmond. (See Pittock, Stott, & Richmond.)			
16074	Stout, T. B., et al. (See Marsh, David.)			
16249	Stout, Thomas B.....	Mill-stone dress.....	Nov. 11, 1856.....	XIII.
14421	Stout, Thomas B.....	Mill, grinding.....	Dec. 16, 1856.....	XIII.
	Stover, Henry D., and J. W. Bicknell.....	Forms, irregular, machine for cutting.....	Mar. 11, 1856.....	XIV.
15593	Stow and Shepherd. (See Shepherd & Stow.)			
16295	Stowell, Abijah D., assignor to John A. Place.....	Wheelwright's machine.....	Aug. 19, 1856.....	XIV.
14579	Stowell, John.....	Saws, reciprocating gig, method of hanging.....	Dec. 23, 1856.....	XIV.
14432	Stratton, Ezra M.....	Axle boxes for carriages.....	April 1, 1856.....	X.
	Stratton, Lorenzo, assignor to himself and Luther Hill.	Boot and shoe soles, manufacture of.....	Mar. 11, 1856.....	XVI.
14117	Stratton & Massey. (See Allen, John F., assignor.)			
14072	Stratton, T. J.....	Ditching machines.....	Jan. 15, 1856.....	IX.
14119	Straub, Abraham.....	Marble obelisks, machines for sawing.....	Jan. 8, 1856.....	XV.
16289	Strong, Francis M., and Thomas Ross.....	Scales, platform.....	Jan. 15, 1856.....	XII.
	Strouse, S. H., and J.....	Shirts.....	Dec. 23, 1856.....	XXI.
	Stuart, Cresson, and Peterson. (See Beesley and Delany.)			

14033	Stubblefield, Thomas	Boiler, steam, alarms	Jan. 1, 1856	VI.
14912	Stubber, John, assignor to John Carton	Lamps, locomotive and railroad	May 20, 1856	V.
14524	Stull, John	Syringe bottles for medicinal agents	Mar. 25, 1856	XX.
15866	Sturtevant, B. F., assignor to E. Townsend	Boots and shoes, pincers for lasting	Oct. 7, 1856	XVI.
14678	Summers, Joseph	Hub, wheel	April 15, 1856	X.
15826	Summers, S. F.	Trunks	Sept. 30, 1856	XVI.
16200	Surgey, William Palmer, assignor to Chas. Henry Stanley	Cigars	Dec. 9, 1856	XXII.
14120	Sutherland, Abner J.	Yarn-dressing frames	Jan. 15, 1856	III.
14525	Sweeny, A. I.	Water meter	Mar. 25, 1856	XI.
	Swetland & Little. (See Vedder and Sanderson, assignors.)			
	Swetland & Little. (See Vedder and Sanderson, assignors.)			
	Swetland & Little. (See Vedder and Ripley, assignors.)			
15349	Swift, George W.	Threshing and cleaning grain in the field, machines for	July 15, 1856	I.
14207	Swingle, Alfred, assignor to Elmer Townsend	Sewing machines	Feb. 5, 1856	III.
14269	Swingle, Alfred, assignor to Elmer Townsend	Boots and shoes, pegging	Feb. 12, 1856	XVI.
15396	Swingle, A., assignor to E. Townsend	Sewing machines	July 22, 1856	III.
15462	Swingle, A., assignor to E. Townsend	Pegging jacks	July 29, 1856	XVI.
410	Swingle, A., assignor to E. Townsend	Sewing machines	Nov. 4, 1856	III.
14258	Taft, Timothy F.	Bolt machine	Feb. 12, 1856	II.
14933	Taggart, John	Excavating scoops	May 20, 1856	IX.
15200	Taggart, John	Buoy, tidal alarm	June 24, 1856	VII.
16201	Taggart, John, and Leonard A. Grover, assignors to Taggart, Grover & Banker.	Husking corn, machines for	Dec. 9, 1856	I.
15723	Taggart, John, assignor to himself and Vernon Brown.	Smoothing irons, furnace	Sept. 9, 1856	XVII.
16076	Taggart, William	Projectile for fire-arms	Nov. 11, 1856	XIX.
15673	Tallant, C. L.	Chairs, invalid	Sept. 2, 1856	XVII.
15907	Talbot, G. H.	Gimlet handles	Oct. 14, 1856	II.
14377	Talcott, D. & G.	Ships' capstans	Mar. 4, 1856	VII.
14986	Talcott, Daniel and George	Ships' capstans	May 27, 1856	VII.
15350	Tarbox, Hiram, 2d	Cattle stall	July 15, 1856	I.
14679	Tatum, Joel H.	Photographic impressions, preparation of oil ground to receive.	April 15, 1856	XVIII.
363	Tatum, Joel H.	Photographic impressions, preparation of oil ground to receive.	May 13, 1856	Reissue.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14476	Taylor, Alvah B.	Hat bodies, machinery for making.	April 18, 1856.	III.
15443	Taylor, Alvah B.	Hat bodies, machinery for forming.	July 29, 1856.	III.
15534	Taylor, Alvah B.	Hat bodies, manufacture of.	Aug. 12, 1856.	III.
14259	Taylor, Benjamin.	Corn, green, instrument for grating.	Feb. 12, 1856.	XVII.
15213	Taylor, George, assignor to H. Ogborn and George W. Stigleman.	Gate, farm.	June 24, 1856.	IX.
14121	Taylor, James S.	Hats, felting, machinery for.	Jan. 15, 1856.	III.
14845	Taylor, James S.	Hat bodies, machinery for felting.	May 6, 1856.	III.
15903	Taylor, James S.	Hat bodies, machinery for forming.	Oct. 14, 1856.	III.
	Taylor, Samuel.	Warps, dressing, manner of constructing brushes for.	May 22, 1856.	Extension.
15308	Taylor, Samuel.	Warps, dressing, brushes for.	July 8, 1856.	III.
15535	Taylor, Thomas W.	Spinning frames.	Aug. 12, 1856.	III.
15351	Teal, Peter.	Coupling shaft, detachable.	July 15, 1856.	X.
15153	Tear, John.	Forms, irregular, method of operating cutters in their head for.	June 17, 1856.	XIV.
14327	Temple, James.	Boring-machine.	Feb. 26, 1856.	XIV.
14215	Terrcl, Charles C., assignor to himself and S. Crawford.	Cannon, many chambered breech-loading.	Feb. 5, 1856.	XIX.
14208	Terry, Harriet V., administratrix of William D. Terry, deceased.	Buildings, cast-iron, mode of constructing.	Feb. 5, 1856.	IX.
15091	Terry, J. B.	Pins, machine for sticking.	June 10, 1856.	II.
15536	Thatcher, George W.	Chimney-cowl.	Aug. 12, 1856.	V.
14422	Thayer, Pliny.	Harvester-cutters.	Mar. 11, 1856.	I.
14781	Thayer, Pliny.	Reaping machines.	April 29, 1856.	I.
15683	Thickins, R. W.	Vice.	Aug. 19, 1856.	II.
16129	Thieme, Charles F.	Gas-cock and swing joint.	Nov. 25, 1856.	IV.
14171	Thomas, Charles F.	Chimney-cowls.	Jan. 29, 1856.	V.
14423	Thomas, John B.	Plane, stock.	Mar. 11, 1856.	XIV.
15154	Thomas, Joseph.	Hat-bodies, sizing, machines for.	June 17, 1856.	III.
15261	Thomas, Joseph.	Hat-bodies, felting, machinery for.	July 1, 1856.	III.
15627	Thomas, Joseph.	Hat-bodies, felting, machinery for.	Aug. 26, 1856.	III.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15582	Tinker, Wm.	Harvesters	Aug. 19, 1856	I.
16194	Tinker, Wm.	Harvesters	Dec. 9, 1856	I.
	Tinkham, Samuel M. (See Crane, Charles S. C., assignor.)			
16041	Tippett, Alfred	Tenoning, etc, tool for	Nov. 4, 1856	XIV.
14261	Titus, Wm. D.	Oil-box for axles, with conical journals	Feb. 12, 1856	XII.
14680	Titus, Wm. D.	Vault covers	April 15, 1856	IX.
16124	Todd, George C.	Boot and shoe soles, edges of, edge keys for making and polishing.	Nov. 25, 1856	XVI.
15748	Tolkurt, G. W.	Harvesting-machines	Sept. 16, 1856	I.
15024	Toll, John A.	Marble sawing machine	June 3, 1856	XV.
15713	Toll, Jose	Marble sawing machines	Sept. 9, 1856	XV.
413	Toll, Jose	Marble sawing machine	Dec. 9, 1856	Re-issue.
132	Tomlinson, O. B.	Cloth, ornamental felt, manufacture of	Feb. 5, 1856	Add'l imp't.
16297	Tompkins, Clark	Knitting-machines	Dec. 23, 1856	III.
14975	Tompkins, Clark, and John Johnson	Knitting-machines, rotary	May 27, 1856	III.
14122	Tompkins, Joseph H.	Daguerreotype plates, box for coating	Jan. 15, 1856	XVIII.
	Torrance, Mann, & Co. (See Vedder, N. S., assignor.)			
15353	Torrey, H. H.	Washing-machine	July 15, 1856	XVII.
15998	Torstrick, Henry	India-rubber, vulcanized, working over	Oct. 28, 1856	IV.
14262	Towers, Wm. H.	Clothes clamp	Feb. 12, 1856	XVII.
14527	Towers, William H.	Creepers to prevent slipping on ice, &c.	Mar. 25, 1856	XXII.
14263	Towne, Leison D.	Planing-machines, cutter-heads for	Feb. 12, 1856	XIV.
	Towne, Wm. J., et al. (See Magee, John, assignor.)			
	Townsend, E. (See Swingle, A., assignor.)			
	Townsend, E. (See Swingle, A., assignor.)			
	Townsend, E., et al. (See Sturtevant, B. F., assignor.)			
	Townsend, Elmer. (See Swingle, Alfred, assignor.)			
	Townsend, Elmer. (See Swingle, Alfred, assignor.)			
	Townsend, Elmer. (See Turner, Sidney S., assignor.)			

13789	Townsend, A. G.	.....	Cruges, feather-edge.....	Sept. 23, 1856.....	XVI.
	Townsend & Turner. (See Turner, Sidney, assignor.)	.....		
14424	Tracy, Erastus	.....	Wrench.....	Mar. 11, 1856.....	II.
14209	Trask, S. J.	.....	Locks, alarm.....	Feb. 5, 1856.....	II.
14209	Treadwell, F. C., jr.	.....	Crackers, moulding, machines for preparing dough for.	May 13, 1856.....	XVII.
	Treadwell, Perry, & Norton. (See Gibbs, Samuel W., assignor.)	.....		
	Treadwell, Perry, & Norton. (See Pratt, Sam'l F., assignor.)	.....		
	Treadwell, Perry, & Norton. (See Pratt, Sam'l F., assignor.)	.....		
	Treadwell, Perry, & Norton. (See Pratt, Sam'l F., assignor.)	.....		
15023	Treadwell, Wm. B.	.....	Stoves, cooking.....	June 3, 1856.....	V.
	Treadwell, W. and J., and Perry & Norton. (See Gibbs, S. W., assignor.)	.....		
	Treadwell, W. and J., and Perry & Norton. (See Gibbs, Sam'l W., assignor.)	.....		
146~1	Trimmer, Benj. T.	.....	Brake, railroad.....	April 15, 1856.....	X.
15988	Triessler, Wm. H., and John Stewart.	.....	Roofs, sheet-metal coverings to, mode of securing ..	Oct. 28, 1856.....	IX.
15712	Trott, Geo., R. H. Coles, and Wm. A. Clark.	.....	Hydraulic puppet valves, method of suspending ..	Sept. 9, 1856.....	XI.
15048	Truesdell, Lucius E.	.....	Bridges, lattice.....	June 3, 1856.....	IX.
15362	Truslow, John W.	.....	Fenders for fire-places ..	July 15, 1856.....	V.
153	Truslow, John W.	.....	Fenders for fire-places ..	Sept. 30, 1856.....	Add'l impt.
16032	Trussell, Richard	.....	Saddles, riding, stirrups for ..	Nov. 4, 1856.....	XVI.
14210	Tufts, Otis	.....	Shafts, wrought-iron, making ..	Feb. 5, 1856.....	XII.
15025	Tufts, Otis	.....	Valves, operating, of steam-engines ..	June 3, 1856.....	VI.
14581	Tufts, S. G.	.....	Fence, field ..	April 1, 1856.....	IX.
15749	Tupper, D. D.	.....	Shingle machine.....	Sept. 16, 1856.....	XIV.
16216	Turley, Marshall	.....	Plows, prairie ..	Dec. 9, 1856.....	I.
14040	Turner, J., jr., assignor to W. Covell.....	.....	Shoe-bindings, manufacture of leather.....	Jan. 1, 1856.....	XVI.
363	Turner, Sidney S., assignor to Elmer Townsend ..	.....	Sewing-machines ..	Mar. 25, 1856.....	Reissue.
15941	Turner, Sidney S., assignor to himself and Elmer Townsend.	.....	Mackarel, splitting, machine for.....	Oct. 21, 1856.....	XXII.
	Turton, T., and J. M. Colman. (See Colman, J. M., and T. Turton.)	.....		
	Tuson, Richard Q., and Hiram Thompson. (See Thompson & Tuson.)	.....		

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15093	Tuttle, Edward A	Registers and ventilators	June 10, 1856	V.
15904	Tuttle, John L.	Cotton-gins and machine cards, manufacturing cylinders for.	Oct. 14, 1856	III.
15905	Tuttle, John L.	Card teeth for machine cards	Oct. 14, 1856	III.
15906	Tuttle, John L.	Cotton-gins	Oct. 14, 1856	III.
15987	Twiford, William B.	Wagon, dumping	Oct. 28, 1856	X.
14814	Tyer, Henry G., and John Helm	Gum elastic cloth, making	May 6, 1856	IV.
	Tyler, C. N., and John C. Mellar. (See Mellar & Tyler.)			
15958	Tyler, C. N., assignor to H. Pardin	Washing-machines	Oct. 21, 1856	XVII.
16027	Tyler, David M.	Water-wheels, method of starting and stopping.	Nov. 4, 1856	XI.
15309	Tyler, John	Water-wheel	July 8, 1856	XI.
14172	Tyler, P. B.	Saw-plates, teeth to, method of attaching.	Jan. 29, 1856	XIV.
15902	Tyler, P. B.	Caster-wheel for furniture, finishing.	Oct. 14, 1856	XVII.
14976	Uchatius, Franz	Steel, making	June 2, 1856	II.
14782	Underwood, Alex.	Matches, friction, machine for manufacturing.	April 29, 1856	XXII.
16212	Underwood, John	Engines, hydraulic and steam, cylinder and piston of.	Dec. 9, 1856	VI.
14636	Updegraff, Edward J.	Wood, machine for bending.	April 8, 1856	XIV.
	Upton, H. P. (See Pratt, Elisha, assignor.)			
14891	Van Amringe, John	Fire and escape ladder	May 13, 1856	V.
386	Van Anden, William, assignor to the American Railroad Chair Manufacturing Co., assignors to A. Frear, J. Brown, and William Van Anden.	Railroad chairs, wrought-iron, machine for making.	Aug. 12, 1856	Reissue.
14478	Van Bunscoorten, Isaac	Lamps, argand, for burning rosin-oil	Mar. 18, 1856	V.
753	Vance, S. B. H., assignor to Mitchell, Bailey, & Co.	Pendants, hall	Jan. 2, 1856	Design.
754	Vance, Samuel B. H., assignor to Mitchell, Bailey, & Co.	Pendants, or chandeliers, hall	Jan. 2, 1856	Design.
777	Vance, Samuel B. H., assignor to Mitchell, Bailey, & Co.	Chandeliers	April 8, 1856	Design.
778	Vance, Samuel B. H., assignor to Mitchell, Bailey, & Co.	Chandeliers	April 8, 1856	Design.

16217	Vancleve, Aaron H. (See Anderson & Vancleve.)	Trap for catching fish, &c.....	Dec. 9, 1856.....	XXII.
15538	Van Hoesen, Levi.....			
15829	Van Horn, Abner. (See Thomas, Wm., assignor.)			
	Van Horn, Chester.....	Metal, planing.....	Aug. 12, 1856.....	II.
	Varney, Thomas.....	Lamps, hydro-carbon vapor.....	Sept. 30, 1856.....	V.
	Vaughan, Ebenezer, and W. S. Bartle. (See Bartle & Vaughan.)			
15161	Vaughn, Horace.....	Compositions for working steel.....	June 17, 1856.....	IV.
824	Vedder, N. S., assignor to Cox, Richardson, and Boynton.	Stoves, cooking.....	Aug. 19, 1856.....	Design.
821	Vedder, N. S., assignor to G. F. Filley.....			
843	Vedder, N. S., assignor to Graff, Reisinger, & Graff.	Stove-plates.....	Aug. 5, 1856.....	Design.
		Stoves, cooking.....	Oct. 7, 1856.....	Design.
842	Vedder, N. S., assignor to Mann, Torrance, & Co.	Stove-plates, cooking.....	Oct. 7, 1856.....	Design.
825	Vedder, N. S., and Ezra Ripley, assignors to Cox, Richardson, & Boynton.	Stoves, cooking.....	Aug. 19, 1856.....	Design.
827	Vedder, N. S., and E. Ripley, assignors to Sweetland & Little.	Stoves, six-plate.....	Aug. 26, 1856.....	Design.
	Vedder & Sanderson. (See Sanderson & Vedder, assignors to Sanders, Wolfe, & Warren.)			
846	Vedder, N. S., and W. L. Sanderson, assignors to G. W. Eddy.	Stoves, cooks'.....	Oct. 21, 1856.....	Design.
810	Vedder, N. S., and Wm. L. Sanderson, assignors to North, Chase, & North.	Stoves.....	June 24, 1856.....	Design.
839	Vedder, N. S., and Wm. L. Sanderson, assignors to North, Chase, & North.	Stoves.....	Oct. 7, 1856.....	Design.
779	Vedder, N. S., and Wm. L. Sanderson, assignors to Sanders, Wolfe, & Warren	Stoves, parlor.....	April 8, 1856.....	Design.
828	Vedder, N. S., and W. L. Sanderson, assignors to Sweetland & Little.	Stoves, cooking.....	Aug. 26, 1856.....	Design.
829	Vedder, N. S., and W. L. Sanderson, assignors to Sweetland & Little.	Stoves, cooking.....	Aug. 26, 1856.....	Design.
790	Vedder, N. S., and W. L. Sanderson, assignors to N. S. Vedder.	Stoves, parlor.....	May 13, 1856.....	Design.
	Vergeennes Scale Manufacturing Company. (See Sampson, E., assignor.)			
14682	Vergues, Maurice.....	Engines, electro-magnetic.....	April 15, 1856.....	VIII.
16203	Vertrees, William A.....	Churns.....	Dec. 9, 1856.....	I.
	Vile & Tingley. (See Brown, Albert H., assignor.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Volcanic Repeating Arms' Company. (See Smith, Horace, and D. B. Weason.)			
	Von Kammerhueber, W. J. (See Schragg & Von Kammerhueber.)			
15359	Von Kammerhueber, W. Jose	Centrolineads	July 16, 1856	VIII.
14747	Vose, Richard	Axles, dividend. for railroad cars	April 22, 1856	X.
768	Vose, Samuel D.	Stoves, parlor	Mar. 4, 1856	Design.
15026	Vrooman, H. S.	Sawing-machine	June 3, 1856	XIV.
15204	Wagner, Cyril B.	Harvesters	June 24, 1856	I.
15205	Wagner, Cyril B.	Harvesters, cutting apparatus for	June 24, 1856	I.
14485	Wagner, I. Z. A.	Saws, reciprocating, method of adjusting	Mar. 18, 1856	XIV.
14621	Wait, P. H.	Paper-machines, felt guide of	April 8, 1856	III.
14748	Waite, Chas. B., and Joseph W. Senor	Coffee-pots	April 22, 1856	XVII.
16034	Walbridge, A. S.	Sawing-mills, self-acting head and tail blocks for	Nov. 4, 1856	XIV.
14546	Walcott, Halsey D., assignor to H. D. and M. E. Walcott.	Wrenches	Mar. 25, 1856	II.
15864	Walker, Alexander J.	Door-springs, bracket for	Oct. 7, 1856	II.
	Walker, F. C., and J. W. Cormack. (See Cormack & Walker.)			
16154	Walker, Henry M.	Siphon a clapet	Dec. 2, 1856	XI.
14934	Walker, Samuel H. and Matthew C.	Gas retort cleaners	May 20, 1856	IV.
	Wall, A. Little O., and John Cole. (See Cole & Wall.)			
15836	Wallace, James, jr.	Bleaching, washing and, use of the dash-wheel for ..	Sept. 30, 1856	III.
15835	Walsh, Henry, assignor to H. Walsh and M. B. Espy.	Corn, green, from the cob, separating	Sept. 30, 1856	XVII.
14838	Walter, Wm. P., and Jacob Green	Glass, molten, ladling of	May 6, 1856	XV.
15445	Walton, G. W., and H. Edgerton	Forms, ellipsoidal, method of turning	July 29, 1856	XIV.
16196	Walton, W. H.	Carding-engines, cleaning the top-flats of	Dec. 9, 1856	III.
15268	Walton, Wm. H., assignor to W. H. Walton and J. E. Winants.	Wool, combing, machinery for	July 1, 1856	III.
15860	Walworth, Caleb C.	Pipe-fittings, gas, machine for finishing	Oct. 7, 1856	I

15862	Walworth, Caleb C.	Vice	Oct.	7, 1856	II.
14849	Ward, A. F.	Marble sawing-machines	May	6, 1856	XV.
14017	Ward, Andrew H., Jr.	Compositions for breaking wool	Jan.	1, 1856	IV.
14479	Ward, Israel W.	Boring-machines, adjustment in	Mar.	18, 1856	XIV.
15262	Ward, James N.	Fire-arms, magazine, hammer for	July	1, 1856	XIX.
15399	Ward, John C.	Car, railroad, coupling	Oct.	14, 1856	X.
15630	Ward, Richard	Grain-cleaner and separator	Aug.	26, 1856	XIII.
14935	Ward, Thomas	Music-rack	May	20, 1856	XVIII.
15861	Ward, William E.	Nut-machines	Sept.	30, 1856	II.
819	Warden, W. (See Wightman, H., and W. Ward.)				
14783	Wardwell, Benjamin, and Ephraim R. Barstow	Stoves, cooking	July	29, 1856	Design.
16033	Wardwell, Charles P. S.	Box-openers	April	22, 1856	XXII.
	Wardwell, George J.	Marble and stone, machine for sawing	Nov.	4, 1856	XV.
	Warfield, A. E. (See Smith, G. H. Brown, and J. A. Read, assignors.)				
	Warfield, A. E. (See Smith, G. H. Brown, and J. A. Read, assignors.)				
15908	Warlick, Noah	Vehicles, arrangement of the thills of	Oct.	14, 1856	X.
15993	Warlick, Noah	Harness, plow, back-band hook for	Oct.	28, 1856	XVI.
15027	Warner, Chapman	Filter	June	3, 1856	IX.
14683	Warner, Dewitt C.	Wigs	April	15, 1856	XXI.
15202	Warner, James	Fire-arms	June	24, 1856	XIX.
15094	Warner, Philip	Shutters, bolt for	June	10, 1856	II.
16299	Warren, A. F.	Pen, fountain	Dec.	23, 1856	XVIII.
14425	Warren, A. F., and C. M. H.	Pen, fountain	Mar.	11, 1856	XVIII.
	Warren, Cox, Morrison, & Co. (See Pierce & Dulley, assignors.)				
	Warren, Cox, Morrison, & Co. (See Pierce & Burnam, assignors.)				
	Warren, Cox, Morrison & Co. (See Burnam & Sanford, assignors.)				
	Warren, Fuller, & Morrison.	(See Pierce & Dulley, assignors.)			
	Warren, Fuller, & Morrison.	(See Pierce & Dulley, assignors.)			
	Warren, Fuller, & Morrison.	(See Dulley, James J., assignor.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16155	Warren, Sanders, & Wolf. (See Sanderson & Vedder, assignors.)	Motion, converting rotary into reciprocating.....	Dec. 2, 1856.....	XIII.
14528	Warren, Wolf, and Sanders. (See Vedder & Sanderson.)	Wrenches	Mar. 25, 1856.....	II.
14529	Warth, Albin.....	Planters, cotton-seed	Mar. 25, 1856.....	I.
14539	Warwick, Atterbury, & Co. (See Knauer, Christian, assignor.)	Hilliers, cotton.....	Mar. 25, 1856.....	I.
14540	Warwick, William.....	Scrapers, cotton.....	Mar. 25, 1856.....	I.
15863	Warwick, William, <i>et al.</i> (See Atterbury & Warwick, assignors.)	Brick-machines	Oct. 7, 1856.....	XV.
15990	Washburn, A. W.....	Fire-arms, breech-loading	Oct. 28, 1856.....	XIX.
14893	Washburn, G. I., and E. H. Bellows.....	Gas-regulators	May 13, 1856.....	V.
15584	Washington, T. A.....	Chimney cowl, self-cleaning.....	Aug. 19, 1856.....	V.
15875	Waterman, Henry.....	Table, self-waiting	Sept. 2, 1856.....	XVII.
14936	Watkins, C. H.....	Saw-set	May 20, 1856.....	XIV.
14423	Watkinson & Sloeum. (See Halvorsen, Halvor, assignor.)	Sewing-machines	Mar. 11, 1856.....	III.
16136	Watson, A.....	Sewing-machines	Nov. 25, 1856.....	III.
16218	Watson, Edward S.....	Plows	Dec. 9, 1856.....	I.
15446	Watson, P. H. (See Manny, John H., assignor.)	Spools, manufacturing, machine for.....	July 29, 1856.....	XIV.
15447	Watson, P. H. (See Manny, John H., assignor.)	Window-sash, hanging, mode of.....	July 29, 1856.....	IX.
	Watson, William. (See Schelly & Stauffer, assignors.)			
14423	Watson, William C., assignor to Ira W. Gregory.....			
16136	Watson, Wm. C., assignor to Watson, Wootter, & Knight.			
16218	Watt, George.....			
15446	Waymouth, A. D.....			
15447	Weaver, Orinwell P.....			

14334	Weaver, Wm., and A. B. Smith. (See Smith & Weaver.)	Coffee-pots	Feb.	26, 1856.	XVII.
14173	Webb, Jacob M.	Tree-nail machines, device in	Jan.	29, 1856.	XIV.
15310	Webber, Elbridge	Turning-machine	July	9, 1856.	XIV.
15792	Webster, Alonzo, and D. K. Bennett	Marble monuments, sawing tapering	Sept.	23, 1856.	XV.
	Webster, A. J., et al. (See Shorey, John C., assignor.)				
14542	Webster, A. W., and Charles Frost. (See Frost & Webster.)	Printing cylinder	Mar.	25, 1856.	XVIII.
15585	Weigert, Benjamin	Fabrics, textile, water-proofing	Aug.	19, 1856.	III.
14179	Weiss, Joseph	Mills, flouring	Jan.	29, 1856.	XIII.
14481	Wellman, George	Carding-machines, stripping top-flats of	Mar.	18, 1856.	III.
15715	Wells, D. G.	Hat-bodies, machinery for forming	Sept.	9, 1856.	III.
396	Wells, Henry A., assignor to Charles St. John, H. A. Barr, A. H. Wright, and James M. Riblet.	Hat-bodies, making, machinery for	Sept.	30, 1856.	Reissue.
400	Wells, Henry A., deceased, assignor to Charles St. John, Henry A. Burr, Albert H. Wright, and James M. Riblet.	Hat-bodies, manufacturing	Oct.	7, 1856.	Reissue.
14480	Wells, Hiram	Saw-spindles, circular, method of suspending	Mar.	18, 1856.	XIV.
16295	Wells, Joseph	Lubricating spindle-steps	Dec.	23, 1856.	IV.
15989	Wells, Moses D.	Washing-machines	Oct.	28, 1856.	XVII.
16219	Wells, Moses D.	Seeding-machines	Dec.	9, 1856.	I.
15832	Wells, Richard	Furnaces	Sept.	30, 1856.	V.
14426	Wells, William, and Mellen Bray	Boots and shoes, soles of, machine for cutting out and "skiving" the, and also for cutting the "rands" therein	Mar.	11, 1856.	XVI.
14211	Wentworth, John B.	Leather, softening, machines for	Feb.	5, 1856.	XVI.
15991	Wentz, Wm.	Shaft-tugs	Oct.	28, 1856.	X.
15267	Werner, C. F., and C. Deutschmann.	Gas purifiers, dry lime	July	1, 1856.	IV.
759	Wesche, Herman E., assignor to Robert Wood	Gates	Feb.	5, 1856.	Design.
762	Wesson, Daniel B. (See Smith, Horace, and D. B. Wesson, assignors.)	Gates	Feb.	12, 1856.	Design.
16130	West, Uel, and Abner Mills.	Condensers and heaters, tubular construction of	Nov.	25, 1856.	VI.
16197	Westerfield, John J.	Mouldings, curved, method of cutting	Dec.	9, 1856.	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15397	Westerhood, Bernard H.	Fire-arms, trigger protector for	July 22, 1856.	XIX.
755	Wetherill, Augustus E.	Bottles, perfumery	Jan. 8, 1856.	Design.
15830	Wetherill, Samuel	Furnaces for zinc-white	Sept. 30, 1856.	V.
15448	Wharton, Joseph	Zinc-white, oxide of, apparatus for purifying	July 29, 1856.	IV.
15311	Wheeler, C., jr.	Harvesters, raking attachment for	Sept. 2, 1856.	I.
15677	Wheeler, C., jr.	Harvesters, cutting device for	Sept. 2, 1856.	I.
15449	Wheeler, C. B., and A. Bascom.	Harvesters, clover seed	July 29, 1856.	I.
	Wheeler, D., and J. B. Fayette. (See Fayette & Wheeler.)			
15028	Wheeler, Marshal.	Gas regulators	June 3, 1856.	V.
15095	Wheeler, Marshal.	Engines, steam, governor for	June 10, 1856.	VI.
815	Wheeler, Moses H. (See Green & Wheeler.)			
836	Wheeler, Russel, and Stephen A. Bailey	Ovens, parlor	July 8, 1856.	Design.
15450	Wheeler, Russel, and Stephen A. Bailey	Stoves, coal, cylindrical	Oct. 7, 1856.	Design.
15155	Wheelock, Benjamin F.	Sad-iron heaters	July 29, 1856.	XVII.
371	Wheelock, Jesse D.	Bakers, heating coal	June 10, 1856.	V.
14041	Whipple, Cullen	Screws, wood, machine for cutting the threads of	June 13, 1856.	Reissue.
	Whipple, Cullen, assignor to New England Screw Company.	Screw machinery	Jan. 1, 1856.	II.
15052	Whipple, Cullen, assignor to New England Screw Company.	Screws, making	June 3, 1856.	II.
	Whipple, Cullen, assignor to New England Screw Company, assignors to Cullen Whipple.	Screws, wood, machine for cutting the threads of	Aug. 16, 1856.	Extension.
14329	Whipple, Heman.	Braces in carpentry, instruments for measuring the lengths of	Feb. 26, 1856.	XIV.
15867	Whipple, M. D., assignor to A. B. Ely.	Files, round, cutting	Oct. 7, 1856.	II.
15912	Whipple, Stephen A., and Heman Whipple.	Emery wheels, cleaning, machine for	Oct. 14, 1856.	II.
14784	Whitaker, John T.	Harvesters, self-rakers for	April 29, 1856.	I.
14264	Whitcomb, James.	Switch, railroad	Feb. 12, 1856.	IX.
15499	White, Francis A.	Leather, stuffing, methods of	Aug. 6, 1856.	XVI.
14977	White, Harry.	Shingle-machine	May 27, 1856.	XIV.
15308	White, Harry.	Riving equal pieces from a block, method of	July 22, 1856.	XIV.

14684	White, Henry H., and Edward A. Gray.....	Saw, stone and marble	April 15, 1856.....	XV.
16157	White, Job.....	Wood, method of applying steam to, and of cutting scarfs from.....	Dec. 2, 1856.....	XIV.
16133	White, J. Claude, and Robert Hay.....	Coal, hoisting, apparatus for.....	Nov. 25, 1856.....	IX.
14123	White, Lewis.....	Curtain fixtures.....	Jan. 15, 1856.....	XVII.
15751	Whitehead, E. W. (See Miller & Whitehead.)			
16156	Whitehead, J.....	Harvesters, self-acting rakes for.....	Sept. 16, 1856.....	I.
14074	Whitehead, Jesse.....	Rakes, self acting, for harvesting machines.....	Dec. 2, 1856.....	I.
341	Whiteley, Abner.....	Candlesticks.....	Jan. 10, 1856.....	V.
14212	Whiteley, Abner.....	Harvesters, grass, track-clearers to.....	Jan. 10, 1856.....	Reissue.
133	Whiteley, Abner.....	Harvesters, grain and grass.....	Feb. 5, 1856.....	I.
14213	Whiteley, Abner.....	Candlesticks.....	Feb. 5, 1856.....	Add'l imp't.
14428	Whiteley, Abner.....	Belt-fastenings.....	Feb. 5, 1856.....	XII.
358	Whiteley, Abner.....	Harvesters, grain and grass.....	Mar. 11, 1856.....	I.
14541	Whiteley, Abner.....	Harvesters, grain and grass.....	Mar. 11, 1856.....	Reissue.
14622	Whiteley, Abner.....	Harvesters, grain and grass.....	Mar. 25, 1856.....	I.
15156	Whiteley, Edward.....	Cooking by steam, boilers for.....	April 8, 1856.....	V.
	Whiteley, Edward.....	Cooking apparatus, water-heaters surrounding fire-pots in.....	June 17, 1856.....	V.
16131	Whiteley, W., Jr.....	Harvesters, raking attachment for.....	Nov. 25, 1856.....	I.
	Whiting, J. S., and O. G. Auld. (See Auld & Whiting.)			
14379	Whitley, Andrew L.....	Saws, circular, method of adjusting.....	Mar. 4, 1856.....	XIV.
15714	Whitman, Ephraim.....	Wind-mill.....	Sept. 9, 1856.....	XI.
15629	Whitman, Wm. H.....	Milking cows, implement for.....	Aug. 26, 1856.....	I.
15547	Whitmarsh, Samuel, assignor to Wm. I. Demorest.	Lamps, vapor burning.....	Aug. 12, 1856.....	V.
	Whitworth, Joseph.....	Streets, sweeping and cleaning, machine for.....	July 21, 1856.....	Extension.
14080	Whorf, S. H., assignor to himself and Charles Rice.	Boots and shoes, manufacture of.....	Jan. 8, 1856.....	XVI.
14380	Whorf, S. H., and Charles Rice.....	Boots and shoes, application of soles to, by means of pressure and gutta-percha or other cement.	Mar. 4, 1856.....	XVI.
15750	Wickersham, John B.....	Iron-fence, posts and ties, construction of.....	Sept. 16, 1856.....	II.
258	Wickersham, John B.....	Bedsteads, metallic.....	Dec. 23, 1856.....	Design.
15363	Wickersham, William.....	Filtering medium.....	July 15, 1856.....	XI.
	Wiener, S. (See Falkenau, M., M. Pollak, and S. Wiener.)			
	Wier & Starrett. (See Starrett & Wier.)			
14988	Wier, Wm. W., and W. Grover.....	Mules, self-acting.....	May 27, 1856.....	III.
15676	Wieterich, Ferdinand, and Conrad Hagen.....	Curtain fixtures.....	Sept. 2, 1856.....	XVII.
14427	Wight, Edwin.....	Dove-tailing machine.....	Mar. 11, 1856.....	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14038	Wight, H. C.	Planing-machine, arrangement of feed-rollers for.	Jan. 1, 1856.	XIV.
14492	Wight, Lyman.	Spinning wheels.	Mar. 18, 1856.	III.
16077	Wight, Reuben.	Doors, weather-strips for.	Nov. 11, 1856.	IX.
14124	Wightman, H., and W. Warden.	Engines, oscillating.	Jan. 15, 1856.	VI.
15586	Wilbur, Greenleaf A.	Grapple for raising sunken bodies.	Aug. 19, 1856.	VII.
15928	Wilbur, P. A.	Nail-plate, feeding.	Oct. 21, 1856.	II.
15910	Wilbur, P. A.	Nail-machines.	Oct. 14, 1856.	II.
14685	Wilcox, Geo. P., and Wm. Butler.	Phrenology, apparatus for teaching.	April 15, 1856.	XXII.
15992	Wilcox, John.	Pens, metallic.	Oct. 28, 1856.	XXIII.
15831	Wilcox, O. D.	Legs, artificial.	Sept. 30, 1856.	XX.
	Wilcox, Stephen, jr. (See Stillman & Wilcox.)			
15451	Wilder, Jas. W.	Boots and shoes, cutting out, machines for.	July 29, 1856.	XVI.
14440	Wilder, Robert M.	Shears, sheep.	May 6, 1856.	I.
14701	Wilder, Shubael.	Puddle-ball squeezer.	April 15, 1856.	II.
14298	Wildman, Russell.	Furnaces for heating slugs for the use of hatters, tailors, and others.	Feb. 19, 1856.	V.
14330	Wildman, Russell.	Hats, hardening, machinery for.	Feb. 26, 1856.	III.
15108	Wiles, Thomas.	Straw-cutters.	June 10, 1856.	I.
	Wiley, James. (See Brown & Wiley.)			
	Wilkinson, Jephtha A.	Printing presses.	Sept. 17, 1856.	Extension.
15539	Willard, Charles W. and John P.	Hammers, valve gear for steam.	Aug. 12, 1856.	VI.
14841	Willard, George, assignor to himself and N. W. C. Jameson.	Car, railroad, seats.	May 6, 1856.	X.
14894	Willard, Horea.	Seeding-machines.	May 13, 1856.	I.
16081	Willey, John F., assignor to himself, Benjamin F. Merrill, and Thomas Phillips.	Excavator.	Nov. 11, 1856.	IX.
15587	Williams, Clarendon.	Boring artesian wells, apparatus for.	Aug. 19, 1856.	IX.
16106	Williams, C. W.	Tailors' pressing-machines.	Nov. 18, 1856.	XXI.
	Williams & Grinnell. (See Grinnell & Williams.)			
15157	Williams, J. P., assignor to H. L. Williams.	Tanning, pre-, compositions.	June 17, 1856.	XVI.
14895	Williams, Jacob S.	Ovens of cooking ranges.	May 13, 1856.	V.
14039	Williamson, George.	Pump for diving bell, hydropneumatic.	Jan. 1, 1856.	XI.

15358	Wille, Silas G. (See Clement & Wille.)	Iron, swaging, machine for	Aug. 19, 1856.....	II.
345	Wilmeth, John T.....	Sewing-machines	Jan. 22, 1856.....	Reissue.
346	Wilson, Allen B.....	Sewing-machines	Jan. 22, 1856.....	Reissue.
15359	Wilson, Allen B.....	Harvesters, grain and grass.....	June 3, 1856.....	I.
414	Wilson, A. B.....	Sewing-machines	Dec. 9, 1856.....	Reissue.
15360	Wilson, Allen B.....	Reels, hand, portable.....	Dec. 23, 1856.....	X.
14483	Wilson, Charles.....	Tunnelling rocks, machine for.....	Mar. 18, 1856.....	IX.
845	Wilson, Daniel.....	Stoves, cooking.....	Oct. 7, 1856.....	Design.
15154	Wilson, George F., and George Payne.....	Fats, sapinizing	June 17, 1856.....	IV.
14892	Wilson, James.....	Furnace for heating soldering irons.....	May 13, 1856.....	V.
14484	Wilson, Jas. H., jr.....	Vehicles, harnesses and thills of, safety apparatus to be applied to.....	Mar. 18, 1856.....	X.
14785	Wilson, John W., and Josiah Mumford. (See Mumford & Wilson.)	Planters, corn.....	April 29, 1856.....	I.
14216	Wilt, Samuel, and Geo. W. Albaugh.....	Boots and shoes, composition soles to, mode of attaching.....	Feb. 5, 1856.....	XVI.
14174	Wimley, John M., assignor to John M. Wimley and W. H. Penrose.....	Wagons, buggy.....	Jan. 29, 1856.....	X.
15312	Winans, Thomas.....	Printing press, hand	July 9, 1856.....	XVIII.
15631	Winants, I. E., and W. H. Walton. (See Walton, W. H., assignor.)	Gates, farm, method of operating	Aug. 26, 1856.....	IX.
16320	Winder, Daniel K.....	Refrigerators	Dec. 23, 1856.....	XVII.
15206	Winegar, Caleb.....	Cans, safety, for burning fluids	June 24, 1856.....	V.
14978	Wing, C. J., and Lynahon, assignors. (See Lynahon & Wing, assignors.)	Valve-gear for steam-engines	May 27, 1856.....	VI.
16158	Winn, I. D., and N. S. Lockwood. (See Lockwood & Winn.)	Wrenches	Dec. 2, 1856.....	II.
15355	Winship, Charles.....	Coupling, car	July 15, 1856.....	X.
14623	Winslow, S. E.....	Spring, surface, method of treating	April 8, 1856.....	XI.
14702	Winsted Auger Company. (See Curtis, Kelsey, assignor.)	Scales, weighing.....	April 15, 1856.....	XII.
14978	Winter, Herman.....	Valve-gear for steam-engines	May 27, 1856.....	VI.
16158	Wisner, Joel. (See Bradley, Robert P., assignor.)	Wrenches	Dec. 2, 1856.....	II.
15355	Witherell, Orin O.....	Coupling, car	July 15, 1856.....	X.
14623	Witmerle, John B.....	Spring, surface, method of treating	April 8, 1856.....	XI.
14702	Wolcott, Anson.....	Scales, weighing.....	April 15, 1856.....	XII.
14702	Wolcott, R. F.....	Scales, weighing.....	April 15, 1856.....	XII.
14702	Wolfe, Sanders, & Warren. (See Sanderson & Vedder, assignors.)	Scales, weighing.....	April 15, 1856.....	XII.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15540	Wolfe, Warren, & Saunders. (See Vedder & Sanderson, assignors.)	Drill, rock.....	Aug. 12, 1856.....	XV.
14331	Wembaugh, P. K. (See Guiou, P. C., and P. K. Wombaugh, assignors.)	Cars, railroad, method of excluding dust from	Feb. 26, 1856.....	X.
14265	Wood, George H.....	Couplings, railroad car.....	Feb. 12, 1856.....	X.
14786	Wood, Joseph.....	Propelling boats.....	April 29, 1856.....	VII.
14846	Wood, Robert. (See Wesche, Herman E.)	Bricks, machine, manufacture of.....	May 6, 1856.....	XV.
15203	Wood, S. W.....	Mowing-machines, dividing shoe for.....	June 24, 1856.....	I.
15264	Wood, Walter A.....	Harvesters, guard-fingers for.....	July 1, 1856.....	I.
15865	Wood, Walter A.....	Hoop-machine	Oct. 7, 1856.....	XIV.
14339	Wood, William P., assignor to himself and John S. Gallaher, jr.	Sawing-machine	Feb. 26, 1856.....	XIV.
365	Wood, William P., assignor to himself and John S. Gallaher, jr., assignor to W. P. Wood.	Sawing-machine	Mar. 25, 1856.....	Reissue.
15053	Wood, William P., assignor to Samuel De Vaughan and William P. Wood.	Mitre-box	June 3, 1856.....	XIV.
15796	Wood, William P., assignor to Samuel De Vaughan and W. P. Wood.	Reaping and mowing-machines	Sept. 23, 1856.....	I.
15790	Wood, William P., and Samuel De Vaughan	Sawing-machines, devices in.....	Sept. 23, 1856.....	XIV.
14429	Woodbury, Moses.....	Faucet	Mar. 11, 1856.....	XI.
142	Woodbury, Moses.....	Faucet	May 6, 1856.....	Add'l imp't.
15404	Woodford, E. S., assignor to James R. Keeler.....	Pins upon paper, or any other material, machine for sewing.....	July 22, 1856.....	II.
15313	Woodman, Horace	Carding engines, machinery for cleaning the top-flats of.....	July 8, 1856.....	III.
16321	Woodruff, Jerome B.....	Sewing-machines	Dec. 23, 1856.....	III.
16160	Woodruff, Theodore T.....	Car, railroad, seats and couches	Dec. 2, 1856.....	X.
16159	Woodruff, T. T.....	Car, railroad, seats and couches	Dec. 2, 1856.....	X.

14381	Woodward, George.....	Bolts, heading.....	Mar.	4, 1856.....	II.
15399	Woodward, James O.....	Sawing coopers' hoops, machine for.....	July	22, 1856.....	XIV.
	Woodward, Thomas.....	Pins, shielded, for securing shawls, diapers, &c., manner of constructing.....	May	7, 1856.....	Extension.
15628	Woolson, Silas.....	Potato-diggers.....	Aug.	26, 1856.....	I.
14979	Worrall, Thomas D.....	Plane-bits, method of securing.....	May	27, 1856.....	XIV.
16309	Worrall, Thomas D.....	Planes, carpenters', method of adjusting the bits of..	Dec.	23, 1856.....	XIV.
418	Worrall, Thomas D., assignor to Millin Paul, as- signor to Thos. D. Worrall, alias Thos. Worrall.	Plane, moulding, multiform.....	Dec.	23, 1856.....	Reissue.
16319	Woreley, John.....	Callender-rolls, manufacturing.....	Dec.	23, 1856.....	III.
15939	Worthen, W.....	Sash, window, balance and fastener for.....	Oct.	21, 1856.....	II.
14749	Worthington, Henry R.....	Valves of direct acting engines by the exhaust steam, completing the throw of the.....	April	22, 1856.....	VI.
15030	Worthington, Henry R.....	Valve, conical, method of attaching stem to a.....	June	3, 1856.....	XI.
15400	Worthington, Henry R.....	Valves from pressure, steam slide, relieving.....	July	22, 1856.....	VI.
15263	Wright, Geo. L.....	Paper, ruling, machines for.....	May	22, 1856.....	Extension.
14332	Wright, James H.....	Faucets, filter attachment for.....	July	1, 1856.....	XI.
15452	Wright, John.....	Metal, sheet, bending.....	Feb.	26, 1856.....	II.
16254	Wright, John.....	Meats, smoking, apparatus for.....	July	29, 1856.....	XVII.
15207	Wright, Wendell.....	Springs in upholstery, mode of securing.....	Dec.	16, 1856.....	XVII.
15208	Wright, William.....	Valves, cut-off, for steam-engines, operating.....	June	24, 1856.....	VI.
16132	Wright, William.....	Valve-checks, cut-off, for steam-engines.....	June	24, 1856.....	VI.
15791	Wright, Wm. M.....	Engines, steam, adjustable cut-offs for.....	Nov.	25, 1856.....	VI.
15541	Wright, Wm., and George Brown.....	Furnaces, warm-air.....	Sept.	23, 1856.....	V.
16198	Wright, Wm., and George Brown.....	Furnace, blast.....	Aug.	12, 1856.....	II.
14075	Wyant, H.....	Planters, seed.....	Dec.	9, 1856.....	I.
14333	Wyche, W. F.....	Plows, cultivating.....	Jan.	8, 1856.....	I.
404	Wyche, W. E.....	Plows, cultivating.....	Feb.	26, 1856.....	I.
	Wyckoff, A., and E. R. Morrison, assignor to A. Wyckoff.....	Boring-machine.....	Oct.	14, 1856.....	Reissue.
15589	Wynblad, Hjalmar.....	Locks.....	Aug.	19, 1856.....	II.
15031	Yale, Linus.....	Lock.....	June	3, 1856.....	II.
15500	Yale, Linus.....	Bolt for vault and safe doors.....	Aug.	5, 1856.....	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15678	Yocum, Samuel H.	Boring hubs for boxes, method of.....	Sept. 2, 1856.....	XIV.
14036	Yost, George W. N.	Harvesters, grain, binders for.....	Jan. 1, 1856.....	I.
14076	Yost, George W. N.	Harvesters, corn.....	Jan. 2, 1856.....	I.
14266	Yost, George W. N.	Harvesters, grain and grass.....	Feb. 12, 1856.....	I.
140	Yost, George W. N. (See Clark & Yost.)			
14582	Yost, George W. N.	Harvesters, grain, binders for.....	April 8, 1856.....	Add'l imp't.
15049	Yost, George W. N.	Harvesters, grain and grass.....	April 1, 1856.....	I.
15050	Yost, George W. N.	Wheels, driving, for steam-drags or propellers.....	June 3, 1856.....	X.
15096	Yost, George W. N.	Propellers, steam, land.....	June 3, 1856.....	X.
14382	Yost, George W. N.	Reaping and mowing machines.....	June 10, 1856.....	I.
14950	Yost, William.....	Scale, weighing, beams.....	Mar. 4, 1856.....	XII.
14624	Youart, James T.	Harvesters, grain and grass.....	May 27, 1856.....	I.
14175	Young, Edwin.....	Slate-frame.....	April 8, 1856.....	XXII.
15911	Young, George D.	Belt or band fastening.....	Jan. 29, 1856.....	XII.
14989	Young, Smith.....	Gates, fastening for.....	Oct. 14, 1856.....	IX.
14937	Zeigler, George W.	Plows.....	May 27, 1856.....	I.
15542	Zeigler, George W., and Manasseh Grover.....	Stumps, extracting, mode of.....	May 20, 1856.....	IX.
15401	Ziervogel, W.	Processes of separating silver from the ore.....	Aug. 12, 1856.....	IV.
16102	Zimmerman, C. M.	Accordeons, valves of.....	July 22, 1856.....	XVIII.
15453	Zimmerman, C. M.	Violins, &c., tail-pieces for.....	Nov. 18, 1856.....	XVIII.
	Zimmerman, Jacob.....	Cultivators.....	July 29, 1856.....	I.

CLASSIFIED LIST OF PATENTS GRANTED DURING THE YEAR 1856, WITH THE NAMES OF PATENTEES, PLACES OF RESIDENCE, AND DATE OF PATENTS.

CLASS I.—AGRICULTURE, including instruments and operations.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14051	Bee hives	George H. Clarke.	East Washington, N. H.	1856. Jan. 8.
14168	Bee hives	H. G. Robertson	Greenville, Tenn.	Jan. 29.
15457	Bee hives	J. S. Brown, assignor to Joseph Kent.	Washington, D. C.	July 29.
15894	Bee hives	Charles Pawling.	Baltimore county, Md.	
15436	Binding grain, &c., machines for.	Washington F. Pagett	New Pittsburg, Ohio.	Oct. 14.
14530	Butter-worker	James H. Bennett.	Stone Bridge, Va.	July 29.
15350	Cattle stall.	Hiram Tarbox, 3d.	Bennington, Vt.	Mar. 25.
14309	Cheese presses. (See Class XII, letter P.)	John U. Fiestler.	Tremont, N. Y.	July 15.
14458	Churns	Lucius Leavenworth.	Winchester, Ohio.	Feb. 26.
14677	Churns	William Newbrough	Trumansburg, N. Y.	Mar. 18.
15412	Churns	Wm. H. Burnham and B. Hibbard.	Mohican, Ohio	April 15.
15661	Churns	Loomis Lamb	Cortland Village, N. Y.	July 29.
15741	Churns	A. Pease.	Berlin, Conn.	Sept. 2.
15787	Churns	Franklin Thorpe	Weston, Vt.	Sept. 16.
16203	Churns	William A. Vertrees.	Shelbyville, Ill.	Sept. 23.
16193	Churns	Charles A. Shaw	Winchester, Mo.	Dec. 9.
16210	Churns	Goodrich Lightfoot	Biddeford, Me.	Dec. 9.
15743	Clevis.	E. A. Palmer	Elgin, Ill.	Dec. 9.
14816	Clover seed, saving machines for.	Mathew Kahle	Clayville, N. Y.	Sept. 16.
14596	Corn, broom, machine for combing seed off.	George F. Burt.	Lexington, Va.	May 6.
14374	Corn-shellers	Jeremiah P. Smith	Harvard, Mass.	April 8.
14745	Corn-shellers.	A. H. Stevens	Hummelstown, Pa.	Mar. 4.
14771	Corn-shellers	E. Mathers.	Waraaw, N. Y.	April 22.
14990	Corn-shellers	Charles S. C. Crane, assignor to Samuel M. Tinkham.	Morgantown, Va.	April 29.
		Ebenezer Morrison	Taunton, Mass.	May 27.
15105	Corn-shellers		Franklin, N. H.	June 10.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15512	Corn-shellers	Calvin Adams	Oak Hill, N. Y.	Aug. 12.
15765	Corn-shellers	J. I. Johnston	Alleghany city, Pa.	Sept. 23.
15920	Corn-shellers	William Black	Alleghany city, Pa.	Oct. 21.
16191	Corn-shellers	Hamilton E. Smith	Philadelphia, Pa.	Dec. 9.
16391	Corn-shellers	Edgar M. Stevens, assignor to E. Town- send.	Boston, Mass.	Dec. 23.
16127	Corn, shelling, disk for	Jeremiah P. Smith	Hummelstown, Pa.	Nov. 25.
16177	Corn, standing, machines for cutting the stalks of.	William B. Coates	Philadelphia, Pa.	Dec. 9.
15746	Cotton pickers	B. G. Shields	Marlin, Texas	Sept. 16.
15606	Cultivator	Hervey D. Ganse	Freehold, N. J.	Aug. 26.
14715	Cultivators	George Esterly	Heart Prairie, Wis.	April 22.
15453	Cultivators	Jacob Zimmerman	Oswego, Ill.	July 29.
14254	Cultivator teeth	C. H. Sayre and G. Klinck	Utica, N. Y.	Feb. 12.
15210	Drills, grain	Abraham Favel, assignor to himself and Thomas D. Lemon.	La Porte, Ind.	June 24.
14708	Fertilizers, processes for preparing. (See Class IV, letter P.)	Warren S. Bartle	Newark, N. Y.	April 22.
15976	Fertilizers, sowing, machine for	Reuben M. Hine	Throopsville, N. Y.	Oct. 23.
15151	Forks, shovels, and hoes, agricultural, the handles of.	Garret J. Olendorf	Middlefield, N. Y.	June 17.
14149	Harrows, revolving	John H. Manny	Rockford, Ill.	Jan. 22.
14703	Harvester cutter-bars	Wm. H. Hovey	Springfield, Mass.	April 29.
14402	Harvester cutter-blades, attaching to the sickle bar.	Israel S. Love	Beloit, Wis.	Mar. 11.
14422	Harvester-cutters	Pinny Thayer	Lansingburg, N. Y.	Mar. 11.
14453	Harvester-cutters	Horace L. Hervey	Quincy, Ill.	Mar. 18.
14544	Harvester-cutters	John H. Manny, assignor to	Rockford, Ill.	Mar. 25.
		Peter H. Watson	Washington, D. C.	
14777	Harvester-cutters	Benjamin T. Roney	Philadelphia, Pa.	April 29.

RESEARCH ON PAPER



RESEARCH ON PAPER

Table 1. The p-Test Results Checklist

p	p-Test Results	p-Test Results	p-Test Results	p-Test Results
1	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:
2	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:
3	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:
4	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:
5	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:
6	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:	The p-Test Results are as follows:

15264	Harvesters, guard-fingers for.....	Walter A. Wood.....	Hessick Falls, N. Y.....	July 1.
15311	Harvesters, raking attachment for.....	C. Wheeler, jr.....	Poplar Ridge, N. Y.....	July 8.
16131	Harvesters, raking attachment for.....	W. Whiteley, jr.....	Springfield, Ohio.....	Nov. 25.
14123	Harvesters, raking attachment to.....	A. H. Caryl.....	Sandusky, Ohio.....	Feb. 5.
15751	Harvesters, self-acting rakes for.....	J. Whitehead.....	Manchester, Va.....	Sept. 16.
15387	Harvesters, self-raker for.....	Silas G. Randall.....	Rockford, Ill.....	July 22.
14784	Harvesters, self-rakers for.....	John T. Whitaker.....	St. Charles, Ill.....	April 29.
14861	Harvesters, self-raking attachments to.....	Hugh Foresman.....	Enora, Ohio.....	May 13.
15034	Harvesters, sickle bars of, attaching teeth to.....	J. C. & L. C. Plucho.....	Cape Vincent, N. Y.....	June 10.
15926	Harvesters, sickles for.....	P. Manny.....	Waddam's Grove, Ill.....	Oct. 21.
16152	Harvesting grain, machines for.....	George F. Foote.....	Buffalo, N. Y.....	Nov. 11.
15569	Harvesting machines.....	Larkin L. Moore.....	Petersburg, Va.....	Aug. 19.
15669	Harvesting machines.....	J. Y. Schelly and J. Stauffer, assignors to Wm. Watson.....	St. Paul, Minn.....	Sept. 2.
15659	Harvesting machines.....	W. A. Kirby.....	Buffalo, N. Y.....	Sept. 2.
15748	Harvesting machines.....	G. W. Tolhurst.....	Cleveland, Ohio.....	Sept. 16.
16244	Harvesting machines.....	Robert J. Morrison.....	Richmond, Va.....	Dec. 16.
16313	Harvesting machines.....	Joseph Carpenter.....	Yorktown, N. Y.....	Dec. 23.
16253	Harvesting machines, finger bar for.....	Wm. H. Seymour, assignor to Seymour & Morgan.....	Brockport, N. Y.....	Dec. 16.
Hay forks, machines for bending. (See Class II, letter F.)				
14533	Hilliers, cotton.....	A. W. Washburn.....	Yazoo City, Miss.....	March 25.
15269	Hulling and scouring grain, seed, &c., machines for.....	Oliver P. Stevens.....	Cleveland, Ohio.....	July 1.
15985	Husking corn, machine for.....	William H. Smith.....	Newport, R. I.....	Oct. 28.
16008	Husking corn, machine for.....	Harlan P. Gerriah.....	Boscawen, N. H.....	Nov. 4.
15017	Husking corn, machines for.....	Oren Stoddard.....	Busti, N. Y.....	June 3.
16023	Husking corn, machines for.....	Joshua Perkins.....	West Killingley, Conn.....	Nov. 4.
16201	Husking corn, machines for.....	John Taggart and Leonard A. Grover, assignors to Taggart, Grover, & Barker.....	Roxbury, Mass.....	Dec. 9.
16204	Husking corn, machines for.....	Robert Bryson.....	Schenectady, N. Y.....	Dec. 9.
14864	Husking, thimble.....	J. H. Gould.....	Smith, Ohio.....	May 13.
15776	Manure distributor.....	J. W. Barnes.....	Murfreesboro', N. C.....	Oct. 14.
15629	Milking cows, implement for.....	William H. Whitman.....	Abington, Penn.....	Aug. 26.
15265	Mowing grass and cutting grain, machines for.....	Anson S. Hathaway, assignor to himself and Frederick A. Ruggles.....	Columbia, Me.....	July 1.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14078	Mowing-machines	Henry Pease, assignor to himself and Jas. Roby.	Brockport, N. Y.	1856. Jan. 8.
14138	Mowing-machines	Joseph S. Manning	Philadelphia, Penn.	Jan. 22.
14404	Mowing-machines	Jacob J. Mann	Westville, Ind.	Mar. 11.
14445	Mowing-machines	Samuel Confort, jr.	Morrisville, Penn.	Mar. 18.
14961	Mowing-machines	William F. Ketchum	Buffalo, N. Y.	May 27.
14998	Mowing-machines	Jonathan F. Barrett, assignor to Abram B. and Jonathan R. Barrett.	North Granville, N. Y.	May 13.
14874	Mowing-machines	C. M. Lufkin	Ackworth, N. H.	May 13.
15160	Mowing-machines	Cornelius Aultman and Lewis Miller, assignors to Ball, Aultman & Co.	Canton, Ohio	June 17.
15354	Mowing-machines	John W. Thompson	Greenfield, Mass.	July 15.
15507	Mowing-machines	Ephraim Ball	Canton, Ohio	Aug. 12.
16274	Mowing-machines	Andrew M. Hall	West Falmouth, Me.	Dec. 23.
14070	Mowing-machines, blades of	Gustavus Stone	Beloit, Wis.	Jan. 8.
15203	Mowing-machines, dividing shoe for	Walter A. Wood	Hosick Falls, N. Y.	June 24.
16247	Mowing and reaping-machines	Jeremiah W. Mulley	Amsterdam, N. Y.	Dec. 16.
15338	Mowing and reaping-machines, frames of	Moses G. Hubbard	Penn Yan, N. Y.	July 15.
14631	Planters, corn	E. P. Lacey	Rochester, N. Y.	April 8.
14776	Planters, corn	Silas G. Randall	Rockford, Ill.	April 29.
14785	Planters, corn	Samuel Wilt and Geo. W. Albaugh	Greeneastle, Penn.	April 29.
14801	Planters, corn	Reinhold Bocklen	Jersey City, N. J.	May 6.
15322	Planters, corn	Moses Bemiss	Lyme, Ohio	July 15.
15426	Planters, corn	James D. Jeffers, Joseph Sparks, and John W. Jeffers.	Philadelphia, Penn.	July 29.
15755	Planters, corn	Malender Bates	Carlton, N. Y.	Sept. 23.
14134	Planters, cotton-seed	John M. Jones, assignor to Newton Foster.	Palmyra, N. Y.	Jan. 22.
14240	Planters, cotton seed	J. L. Horn	Edgecombe, N. C.	Feb. 12.
14529	Planters, cotton-seed	A. W. Washburn	Yazoo City, Miss.	Mar. 25.
15261	Planters, cotton-seed	J. A. Stewart	Franklin, Ky.	July 1.

RESEARCH RECOMMENDATIONS		THE STUDY
Initial Recommendations		THE STUDY
<p>1. The study should be replicated with a larger sample size.</p> <p>2. The study should be replicated with a different sample of participants.</p> <p>3. The study should be replicated with a different set of stimuli.</p> <p>4. The study should be replicated with a different set of tasks.</p> <p>5. The study should be replicated with a different set of measures.</p>		<p>1. The study was replicated with a larger sample size.</p> <p>2. The study was replicated with a different sample of participants.</p> <p>3. The study was replicated with a different set of stimuli.</p> <p>4. The study was replicated with a different set of tasks.</p> <p>5. The study was replicated with a different set of measures.</p>
<p>6. The study should be replicated with a different set of conditions.</p> <p>7. The study should be replicated with a different set of variables.</p> <p>8. The study should be replicated with a different set of methods.</p> <p>9. The study should be replicated with a different set of results.</p> <p>10. The study should be replicated with a different set of conclusions.</p>		<p>6. The study was replicated with a different set of conditions.</p> <p>7. The study was replicated with a different set of variables.</p> <p>8. The study was replicated with a different set of methods.</p> <p>9. The study was replicated with a different set of results.</p> <p>10. The study was replicated with a different set of conclusions.</p>
<p>11. The study should be replicated with a different set of hypotheses.</p> <p>12. The study should be replicated with a different set of theories.</p> <p>13. The study should be replicated with a different set of models.</p> <p>14. The study should be replicated with a different set of frameworks.</p> <p>15. The study should be replicated with a different set of perspectives.</p>		<p>11. The study was replicated with a different set of hypotheses.</p> <p>12. The study was replicated with a different set of theories.</p> <p>13. The study was replicated with a different set of models.</p> <p>14. The study was replicated with a different set of frameworks.</p> <p>15. The study was replicated with a different set of perspectives.</p>
<p>16. The study should be replicated with a different set of questions.</p> <p>17. The study should be replicated with a different set of answers.</p> <p>18. The study should be replicated with a different set of findings.</p> <p>19. The study should be replicated with a different set of implications.</p> <p>20. The study should be replicated with a different set of suggestions.</p>		<p>16. The study was replicated with a different set of questions.</p> <p>17. The study was replicated with a different set of answers.</p> <p>18. The study was replicated with a different set of findings.</p> <p>19. The study was replicated with a different set of implications.</p> <p>20. The study was replicated with a different set of suggestions.</p>
<p>21. The study should be replicated with a different set of conclusions.</p> <p>22. The study should be replicated with a different set of recommendations.</p> <p>23. The study should be replicated with a different set of suggestions.</p> <p>24. The study should be replicated with a different set of findings.</p> <p>25. The study should be replicated with a different set of implications.</p>		<p>21. The study was replicated with a different set of conclusions.</p> <p>22. The study was replicated with a different set of recommendations.</p> <p>23. The study was replicated with a different set of suggestions.</p> <p>24. The study was replicated with a different set of findings.</p> <p>25. The study was replicated with a different set of implications.</p>

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14078	Mowing machines	Henry Pesse, assignor to himself and Jas. Roby.	Brockport, N. Y.	1856. Jan. 8.
14138	Mowing-machines	Joseph S. Manning	Philadelphia, Penn.	Jan. 22.
14404	Mowing-machines	Jacob J. Mann	Westville, Ind.	Mar. 11.
14445	Mowing-machines	Samuel Comfort, Jr.	Morrisville, Penn.	Mar. 18.
14961	Mowing-machines	William F. Ketchum	Buffalo, N. Y.	May 27.
14898	Mowing-machines	Jonathan F. Barrett, assignor to Abram B. and Jonathan R. Barrett.	North Granville, N. Y.	May 13.
14974	Mowing-machines	C. M. Lutkin	Ackworth, N. H.	May 13.
15160	Mowing-machines	Cornelius Aultman and Lewis Miller, assignors to Ball, Aultman & Co.	Canton, Ohio	June 17.
15354	Mowing-machines	John W. Thompson	Greenfield, Mass.	July 15.
15507	Mowing-machines	Ephraim Ball	Canton, Ohio	Aug. 12.
16274	Mowing-machines	Andrew M. Hall	West Falmouth, Me.	Dec. 23.
14070	Mowing-machines, blades of	Gustavus Stone	Beloit, Wis.	Jan. 8.
15203	Mowing-machines, dividing shoe for	Walter A. Wood	Housick Falls, N. Y.	June 24.
16247	Mowing and reaping-machines	Jeremiah W. Mulley	Amsterdam, N. Y.	Dec. 16.
15338	Mowing and reaping-machines, frames of	Moses G. Hubbard	Penn Yan, N. Y.	July 15.
14631	Planters, corn	E. P. Lacey	Rochester, N. Y.	April 8.
14776	Planters, corn	Silas G. Randall	Rockford, Ill.	April 29.
14785	Planters, corn	Samuel Wilt and Geo. W. Albaugh	Greencastle, Penn.	April 29.
14801	Planters, corn	Reinhold Bocklen	Jersey City, N. J.	May 6.
15322	Planters, corn	Moses Bemis	Lyme, Ohio	July 15.
15426	Planters, corn	James D. Jeffers, Joseph Sparks, and John W. Jeffers.	Philadelphia, Penn.	July 29.
15755	Planters, corn	Malender Bates	Carlton, N. Y.	Sept. 23.
14134	Planters, cotton-seed	John M. Jones, assignor to Newton Foster.	Palmyra, N. Y.	Jan. 22.
14940	Planters, cotton seed	J. L. Horn	Edgecombe, N. C.	Feb. 12.
14529	Planters, cotton-seed	A. W. Washburn	Yazoo City, Miss.	Mar. 25.
15257	Planters, cotton-seed	J. A. Stewart	Franklin, Ky.	July 1.

15640	Planters, cotton-seed	D. J. Beecher.....	Greenville, Miss.....	Sept. 2.
15918	Planters, cotton-seed	Charles R. Belt	Washington, D. C.....	Oct. 21.
14314	Planters, hand corn	William Jenks	Alexandria, Va.....	Mar. 25.
15035	Planters, hand corn	Samuel L. Denney.....	Penningtonville, Penn.....	June 3.
15114	Planters, hand corn	George Atkins	Pittsburg, Penn.....	June 17.
15616	Planters, hand corn	Cornelius Martratt.....	Albany, N. Y.....	Aug. 26.
15636	Planters, hand corn	H. B. Hammon	Bristolville, Ohio.....	Sept. 9.
16135	Planters, hand corn	Thos. A. Chandler, assignor to H. Her- rick and T. A. Chandler	Rockford, Ill.....	Nov. 25.
14767	Planters, hand seed	Edward Hopkins	Cincinnati, Ohio	April 22.
15431	Planters, hand seed	A. C. Miller.....	Morgantown, Va.....	July 29.
15610	Planters, hand seed	S. Herva Jones	Rockton, Ill.....	Aug. 26.
15433	Planters, potato	John Moore	Quincy Point, Mass	July 29.
14144	Planters, seed	F. Plummer	Manchester, Ind	Jan. 22.
14235	Planters, seed	R. & W. L. Gebby.....	New Richland, Ohio.....	Feb. 12.
14465	Planters, seed	Elijah Morgan	Morgantown, Va	Mar. 18.
15101	Planters, seed	P. B. Green and E. A. Kennedy.....	Waukegan, Ill	June 10.
15106	Planters, seed	George A. Meacham.....	New York, N. Y.....	June 16.
15182	Planters, seed	George Hall	Morgantown, Va.....	June 24.
15691	Planters, seed	John Fordyce.....	Morgantown, Va.....	Sept. 9.
15822	Planters, seed	John F. Seaman.....	Walcott, N. Y.....	Sept. 30.
15810	Planters, seed	B. Kuhns and M. J. Haines.....	Dayton, Ohio.....	Sept. 30.
15955	Planters, seed	J. H. Shireman	East Berlin, Pa.....	Oct. 21.
15974	Planters, seed	Jesse D. Harris	Perry, Ga.....	Oct. 28.
16198	Planters, seed	H. Wyant.....	Vincennes, Ind.....	Dec. 9.
16314	Planters, seed	N. C. Sherman and J. Mason	Hazle Green, Wis.....	Dec. 23.
14533	Plough, cultivating.....	Micajah Crenshaw.....	Springfield, Texas.....	Mar. 25.
14726	Plough handles, &c., machine for bending. (See Class XIV.)			
14013	Plough, subsoil	Pella, Manny.....	Waddam's Grove, Ill.....	April 22.
14044	Ploughs.....	George W. Cooper	Ogechee, Ga.....	Jan. 1.
14224	Ploughs.....	B. F. Avery	Louisville, Ky	Jan. 8.
		John Clarke, and.....	Washington, D. C.....	Feb. 12.
		G. W. N. Yost	Pittsburg, Pa.....	
14288	Ploughs.....	James B. Mell	Riceboro', Ga.....	Feb. 19.
14346	Ploughs.....	James J. Calenhead.....	Macon county, Ala.....	Mar. 4.
14989	Ploughs	George W. Zeigler	Tiffin City, Ohio.....	May 27.
15137	Ploughs.....	N. S. Lockwood and J. D. Winn	Dayton, Ohio.....	June 17.
15344	Ploughs.....	John Rich.....	Kingsbury, N. Y	July 15.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15321	Ploughs.....	Alvin Barton	Syracuse, N. Y.	July 15.
15654	Ploughs.....	Benniah C. Hoyt	Port Washington, Wis.	Sept. 2.
15649	Ploughs.....	Josephus P. Harris	Byhalia, Miss.	Sept. 2.
15887	Ploughs.....	Samuel A. Knox	Worcester, Mass.	Oct. 14.
16277	Ploughs.....	Jacob Heckendorn	Elkton, Md.	Dec. 23.
16260	Ploughs.....	Jonathan Adams	Eatonton, Ga.	Dec. 23.
14075	Ploughs, cultivating	W. E. Wyche	Brookville, N. C.	Jan. 8.
14333	Ploughs, cultivating	William E. Wyche	Brookville, N. C.	Feb. 19.
15919	Ploughs, coulters or, apparatus for cleaning ..	Edmund C. Bills, jr.	Perry, N. Y.	Oct. 21.
14257	Ploughs, draining, mode of	A. E. and C. Marquies, and.....	Monticello, Ill.	Feb. 19.
		Charles Emerson	Decatur, Ill.	
14373	Ploughs, gang	Aaron and Thomas S. Smith	Troy, Ill.	Mar. 4.
15039	Ploughs, subsoil	Cyrus Garrett and Thomas Cottman	Cincinnati, Ohio	June 3.
14810	Potato diggers.....	Abram Hulings	Philadelphia, Pa.	May 6.
15100	Potato diggers.....	Amos L. Grinnell and John Z. Williams	Wilket, Wis.	June 10.
15628	Potato diggers.....	S. Wollson	Moodna, N. Y.	Aug. 26.
16184	Potato diggers.....	William Muschl	New York, N. Y.	Dec. 9.
14097	Pruning trees, implements for	W. W. Harvey	Saltville, Va.	Jan. 15.
16016	Rakes for reapers, automatic.....	Pella, Manny	Waddam's Grove, Ill.	Nov. 4.
15601	Rakes, hay.....	Charles P. Carpenter	St. Johnsbury, Vt.	Aug. 26.
16653	Rakes, hay.....	H. Heaberlin	Scipio, Ind.	Sept. 2.
15777	Rakes, hay.....	Isaac I. Robbins	Penn's Manor, Pa.	Sept. 23.
16025	Rakes, hay.....	Thomas R. Roach.....	West Needham, Mass.	Nov. 4.
16318	Rakes, hay.....	John J. Squire.....	St. Louis, Mo.	Dec. 23.
14321	Rakes, horse.....	Nathan Martz.....	Brier Creek township, Pa.	Feb. 26.
14067	Rakes, horse hay	Randal Pratt	Marple township, Pa.	Jan. 8.
16156	Rakes, self acting, for harvesting machines.....	Jesse Whitehead.....	Manchester, Va.	Dec. 2.
16145	Raking apparatus for harvesters.....	S. R. Hunter.....	Cortlandt, N. Y.	Dec. 2.
15237	Raking attachment for reapers.....	John C. Hicks.....	Rockaway, N. Y.	July 1.
15046	Raking and loading hay, machine for.....	Joseph Smith	Condit, Ohio.....	June 3.
14533	Raking and loading hay, machines for.....	D. H. Thompson	Fitchburg, Mass.	Mar. 25.

15174	Reapers	Owen Dorsey.....	Triadelphia, Md.....	June 24.
15655	Reapers, raking attachment for.....	M. G. Hubbard.....	Penn Yan, N. Y.....	Sept. 2.
15096	Reaping and mowing machines.....	George W. N. Yost.....	Pittsburg, Pa.....	June 10.
15252	Reaping and mowing machines.....	John Rely.....	Heart Prairie, Wis.....	July 1.
15796	Reaping and mowing machines.....	Wm. P. Wood, assignor to Samuel De Vaughan and W. P. Wood.....	Washington, D. C.....	Sept. 23.
16251	Reaping and mowing machines.....	Daniel C. Smith.....	Tecumseh, Mich.....	Dec. 16.
16258	Reaping and mowing machines.....	Thomas D. Burrall.....	Geneva, N. Y.....	Dec. 16.
14781	Reaping-machines.....	Pliny, Thayer.....	Lansingburg, N. Y.....	April 29
15044	Reaping-machines.....	Jacob J. and H. F. Mann.....	Westville, Ind.....	June 3.
16183	Reaping-machines, teeth for.....	M. G. Hubbard.....	Penn Yan, N. Y.....	Dec. 9.
14673	Rice, reaping, implement for.....	W. J. McIntosh.....	Savannah, Ga.....	April 15.
14540	Scrapers, cotton.....	A. W. Washburn.....	Yazoo city, Miss.....	Mar. 25.
14543	Scythe-fastening	Thomas C. Ball, assignor to..... } Nathaniel Lamson..... }	Walpole, N. H..... }	Mar. 25.
14842	Scythe-fastenings.....	Denison W. Green, assignor to himself and Aretas Ferry.....	Shelburne, Mass..... }	May 6.
15849	Scythes to snaths, attaching.....	David A. Goodnow.....	Baldwinville, Mass.....	Oct. 7.
15194	Seeding-machine, hand.....	Silas G. Randall.....	Rockford, Ill.....	June 24.
14073	Seeding-machines	John G. Snyder.....	Wheatfield, Pa.....	Jan. 8.
14284	Seeding-machines	Stephen Gorsuch.....	Altoona, Pa.....	Feb. 19.
14450	Seeding-machines	John German and C. B. Hoyt.....	Oriakany Falls, N. Y.....	Mar. 18.
14703	Seeding-machines	Thomas A. Risher, assignor to Thomas A. Risher and I. K. Cooper.....	Lancaster, Ohio.....	April 15.
14707	Seeding-machines	George I. Bidler.....	Lancaster, Ohio.....	April 22.
14894	Seeding-machines	Hosea Willard.....	Vergennes, Vt.....	May 13.
15104	Seeding-machines	C. O. Luce.....	Freeport, Ill.....	June 10.
16219	Seeding-machines	Moses D. Wells.....	Morgantown, Va.....	Dec. 9.
16209	Seeding-machines	James N. Kern.....	Morgantown, Va.....	Dec. 9.
16195	Seeds in the earth, implements for rolling	Anson Thompson.....	Glenn's Falls, N. Y.....	Dec. 9.
14570	Seeds or grain in the field, machine for gathering.....	Thomas E. Marable.....	Petersburg, Va.....	April 1.
14517	Separators, grain.....	Cyrus Roberts and John Cox.....	Belleville, Ill.....	Mar. 25
15948	Shearing sheep	J. V. Jenkins	Jackson, Mich.....	Oct. 21
14354	Shears, sheep.....	Luther B. Fisher.....	Coldwater, Mich.....	Mar. 4.
14840	Shears, sheep.....	Robert M. Wilder.....	Coldwater, Mich.....	May 6.
16264	Snath of a grain cradle, mode of securing braces in the.....	William W. Bryan.....	Schaghticoke, N. Y.....	Dec. 23.
14629	Sowing seed broadcast, machine for	Jesse Lincoln.....	Union Town, Pa.....	April 8.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14274	Sowing seed broadcast, machines for	Edward F. Berry	Hudson, N. H.	1856. Feb. 19.
14630	Sowing seed broadcast, machines for	Peter Lawrenson	New York, N. Y.	April 4.
14837	Sowing seed broadcast, machines for	Enos Stinson	North Craftsbury, Vt.	May 6.
16322	Sowing seed broadcast, machines for	E. K. Haynes, assignor to self and A. M. Mowe.	Hanover, N. H.	Dec. 23.
16007	Spading machine	Orinrod C. Evans	Stantown, Ohio	Nov. 4.
15371	Spreaders, lime and guano	William Croasdale	Hartsville, Pa.	June 24.
15320	Straw-cutter	Warren S. Bartle and Ebenezer Vaughan.	Newark, N. Y.	July 15.
15312	Straw-cutter	Oren Moses	Malone, N. Y.	July 15.
15323	Straw-cutter	Cotton Foss	Painesville, Ohio	July 15.
14116	Straw-cutters	Samuel T. Sharp	Danville, Mo.	Jan. 15.
14410	Straw-cutters	Edwin P. Russell	Manlius, N. Y.	Mar. 11.
15103	Straw-cutters	Thomas Wiles	Somerset, Ohio	June 11.
15485	Straw-cutters	J. H. Gooch	Oxford, N. C.	Aug. 5.
15674	Straw-cutters	Shelton M. Thompson	Glasgow, Ky.	Sept. 2.
15761	Straw-cutters, feed rolls of	Alexander Gordon	Rochester, N. Y.	Sept. 23.
15319	Threshing and cleaning grain in the field, machines for.	George W. Swift	Oxford, Miss.	July 15.
15116	Threshing and winnowing grain, machines for.	Alfred Belchambers	Ripley, Ohio	June 17.
15786	Threshing, grain, machine	Isaac S. Spencer	Guilford, Conn.	Sept. 23.
15917	Threshing, grain, and separating machines	John Barnes	Mount Morris, N. Y.	Oct. 21.
14444	Threshing-machines	Hiram Clark	Princeton, Mass.	Mar. 15.
15974	Threshing-machines	William Holmes	Brooklyn, N. Y.	June 10.
14462	Trees, felling, machine for	Ebenezer Mathers	Morgantown, Va.	Mar. 18.
14654	Vines, mode of protecting	Abel H. Greenell	Springfield, Vt.	April 15.
14865	Winnowing mills	Horace N. Goodrich	Aurora, Ill.	May 13.
15444	Yokes, ox	Miron Smith	Sandisfield, Mass.	July 29.

CLASS II. — METALLURGY, and manufacture of metals, and instruments therefor.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15037	Amalgamator	James W. Evans	New York, N. Y.	June 3. 1856.
15619	Amalgamator.	Alva M. Stetson.....	San Francisco, Cal.	Aug. 26.
14023	Amalgamator, gold.	Daniel Leitch.....	Middletown, Ohio	Jan. 1.
15524	Amalgamator, gold-washer, and	Warren S. Pierce	North Attleborough, Mass.	Aug. 12.
15147	Auger-handles	N. C. Sanford.....	New Haven, Conn.....	June 17.
14561	Augers, method of manufacturing	George G. Griswold	Chester, Conn	April 1.
15656	Axes, machine for testing	Warren Hunt.....	East Douglas Mass.....	Sept. 2.
15880	Axe-polls, making	D. P. Estep.....	Pittsburg, Pa.....	Oct. 14.
14704	Awl-haft	Benjamin James, assignor to Roswell E. James.	Worcester, Mass	April 15.
14695	Bars, railroad, repairing	James McLellan.....	Detroit, Mich.....	April 15.
15687	Bars, railroad, repairing	Joseph D. Cawood.....	Marshall, Mich.....	Sept. 9.
14876	Bits, fastening	Horace Lettington.....	Norwich, N. Y.	May 13.
15500	Blow-pipe, spirit. (See Class V, Letter B)	Linus Yale.....	Newport, N. Y.	Aug. 5.
15729	Bolt for vault and safe doors.....	E. & P. Coleman	Philadelphia, Pa.....	Sept. 16.
14258	Bolt, heading	Timothy F. Taft.....	Fitchburg, Mass.....	Feb. 12.
16228	Bolt, machine	William E. Copeland.....	Fall River, Mass.....	Dec. 16.
14351	Bolt, spring	George Woodward	Brunswick, Me.....	Mar. 4.
14086	Bolts, heading	H. M. Clark	New Britain, Conn.....	Jan. 15.
16301	Bolts, heading, machines for.....	W. Hannah, assignor to L. H. Bowen and W. Hannah.	Middlefield, N. Y.....	Dec. 23.
14633	Bolts, trimming, machine for	Robert G. Pine.....	Sing Sing, N. Y.....	April 8.
14633	Buckles, polishing, machine for			
14442	Casting car wheels. (See Class X, letter W.)	William Butler.....	Little Falls, N. Y.....	Mar. 18.
14442	Castings, chilled, making.....			
15427	Catch, double-acting, for reversible backs of settees. (See Class XVII, letter S.)	F. R. Langwith	New York, N. Y.....	July 29.
16115	Clamp for plumbers	Evan L. Evans.....	Providence, R. I.....	Nov. 25.
15540	Combs, curry.....	Geo Felters and J. S. McClintock	Philadelphia, Pa.....	Aug 19.
15540	Coupling pipes.....			

Classified List of Patents issued—Continued.

No.	Inventions or discoveries	Patentees.	Residence.	Date of patent.
15312	Dies for screw-blanks.....	Charles R. Gardner.....	Detroit, Mich.....	Aug. 12. 1856.
15278	Dies for stamping or pressing sheet-metal.....	Wm. M. Booth and James H. Milla.....	Buffalo, N. Y.....	July 8.
15080	Die stock for cutting screws.....	Patrick, McGlew.....	Waterford, Conn.....	June 10.
14834	Door-fastener.....	Willard H. Smith.....	New York, N. Y.....	May 6.
16048	Door-fastener.....	Legrand Crofoot.....	Syracuse, N. Y.....	Nov. 11.
16282	Door-fastener.....	James Letort.....	Wytheville, Va.....	Dec. 23.
14594	Door-fasteners.....	G. H. Lindner.....	Hoboken, N. J.....	April 8.
14773	Door-fasteners.....	Elisha P. Moulton.....	Baltimore, Md.....	April 29.
14112	Door-fastenings.....	Reed Peck.....	Cortlandville, N. Y.....	Jan. 15.
15332	Door-knob.....	Henry H. Elwell.....	Meriden, Conn.....	July 15.
15367	Door-knobs.....	Jeremy W. Bliss.....	Hartford, Conn.....	July 22.
14595	Door-knobs, fastening.....	Nathan Benham.....	Hartford, Conn.....	April 8.
16047	Door-knob spindles, fastening.....	Almon Cooley.....	Hartford, Conn.....	Nov. 11.
14326	Door-spring.....	David G. Smith.....	Carbondale, Pa.....	Feb. 26.
14691	Door-spring.....	George W. Griswold.....	Carbondale, Pa.....	April 15.
14686	Door-spring.....	Gilbert L. Bailey.....	Portland, Me.....	April 15.
15555	Door-spring.....	John Broughton.....	Chicago, Ill.....	Aug. 19.
14583	Door springs.....	Alvin Barton, assignor to himself, A. R. Morgan, and J. M. Parsons. Alexander J. Walker.....	Syracuse, N. Y.....	April 1.
15864	Door-springs, bracket for.....	Anson H. Platt.....	New York, N. Y.....	Oct. 7.
15493	Door-stay.....	.....	Yellow Springs, Ohio.....	Aug. 5.
15913	Eave-troughs, machine for making. (See Class IX.) Emery wheels, cleaning, machines for.....	Stephen A. Whipple and Heman Whipple. James L. Norton.....	Shaftsbury, Vt.....	Oct. 14.
14891	File-cutting machine.....	George M. Ramsay.....	Alum Bank, Pa.....	May 13.
15525	Files.....	Major H. Fisher, assignor to Joseph A. Hyde. Charles Miller.....	New York, N. Y.....	Aug. 12.
14159	Files, cutting.....	M. D. Whipple assignor to A. B. Ely.....	Sing Sing, N. Y.....	Feb. 5.
16061	Files, cutting.....	.....	New York, N. Y.....	Nov. 11.
	Files round cutting.....	.....	Newton, Mass.....	Oct. 7.

14373	Forge-dies	Wm. Rodgers and Abraham Bannon	Bellefonte, Pa.	April 1.
14371	Forging horse-shoe nails, machinery for	Charles Parkhurst and Charles Weed	Boston, Mass.	Aug. 19.
14280	Forging thimbles	Geo. H. Corlies and Elisha Harris	Providence, R. I.	Feb. 19.
15116	Forks, hay, machine for bunding	Nathan Braod	Leonardsville, N. Y.	June 17.
15541	Furnace, blast	Wm. Wright and George Brown	Newcastle, Eng.	Aug. 12.
14257	Furnaces, blast, fluxing	Christian Shunk	Slate Lick, Pa.	Feb. 12.
15307	Gimlet-handles	G. H. Talbot	Boston, Mass.	Oct. 14.
14316	Gold and other precious metals from foreign substances, machines for separating	Edward N. Kent	New York, N. Y.	Feb. 26.
14847	Gold washing, riffle for.	O. G. Auld and J. S. Whiting	Stockton, Cal.	May 13.
14058	Hammer heads to shafts, attaching	Charles Hammond	Philadelphia, Pa.	Jan. 8.
14167	Hinge	George M. Ramsay	New York, N. Y.	Jan. 29.
14349	Hinge for shutters	Isaac Davis	Groton, N. Y.	Mar. 4.
16272	Hinge, spring	John T. Garlick	New York, N. Y.	Dec. 23.
15241	Hinges, butt, machine for grinding	Cyrus Kenney and William Gurley	Troy, N. Y.	July 1.
16273	Hoof expander	C. B. and Samuel Galentine and Andrew J. Russell	Nunday, N. Y.	Dec. 23.
14193	Hooks, ships, machines for bending	Elisha Harris	Providence, R. I.	Feb. 5.
14552	Horse shoe	Nelson B. Carpenter	New York, N. Y.	May 13.
14915	Horse shoe	John Henderson	Elmira, N. Y.	May 20.
15306	Horse shoe	Sewall Short	New London, Conn.	July 8.
16082	Iron and steel, manufacture of	Henry Bessemer	London, England	Nov. 11; England, Feb. 12.
15750	Iron fence, posts and ties, construction of	John B. Wickerham	New York, N. Y.	Sept. 16.
16186	Iron, forging, machines for	S. S. Putnam	Boston, Mass.	Dec. 9.
16083	Iron ore, smelting	Henry Bessemer	London, England	Nov. 18; England, Aug. 25.
15159	Iron plates, welding	William Bertram, assignor to John W. Cochran	Woolwich, England	June 17; England, Dec. 21, 1854.
14412	Iron, puddling	Richard Savary	Steubenville, Ohio	Mar. 11.
14114	Iron scraps, remelting	Abiel Pevey	Lowell, Mass.	Jan. 15.
14527	Iron shingles, cast, lugs for. (See Class IX, letter S.)	Thomas H. Powers	Wyocena, Wis.	May 6.
14527	Iron, smelting, furnaces for			
14527	Iron, soldering, furnace for heating. (See Class V, letter F.)			
15247	Kettle, brass, machine	O. W. Minard	Waterbury, Conn.	July 1.
15061	Kettle, brass, machine for making	E. C. Blakeslee, E. Platt, and E. Jordan	Waterbury, Conn.	Oct. 28.
14096	Kettles, brass, making	O. W. Minard	Waterbury, Conn.	April 15.

Classified List of Patents issued—Continued.

No.	Inventions and discoveries.	Patentees.	Residence.	Date of patent.
14287	Kettles, brass, making.....	Frederick J. Seymour.....	Waterbury, Conn.....	1856.
15772	Kettles, brass, making.....	O. W. Minard.....	Waterbury, Conn.....	May 13.
15031	Lock.....	Linus Yale.....	Newport, N. Y.....	Sept. 23.
15708	Lock.....	Henry D. Russell.....	Naugatuck, Conn.....	June 3.
14209	Lock, alarm.....	S. J. Trask.....	Guilford Centre, N. Y.....	Sept. 9.
15468	Lock, alarm.....	Julius Cone.....	Yellow Springs, Ohio.....	Feb. 5.
14958	Lock and key.....	Ezekiel M. Hendrickson.....	Brooklyn, N. Y.....	June 24.
14178	Lock, cell.....	E. Kershaw, assignor to Kershaw and H. N. Cooper & Co.....	Boston, Mass.....	May 27.
15136	Lock, door.....	Christian Kuerner, assignor to Warwick, Atterbury, & Co.....	Birmingham, Pa.....	Jan. 29.
15783	Lock for freight cars.....	Thomas Slaight.....	Newark, N. J.....	June 17.
14675	Lock, hasp.....	M. Newman, 2d.....	Oak Hill, N. Y.....	Sept. 23.
14080	Lock, pad.....	I. J. Oldis.....	Wheeler, N. Y.....	April 15.
15270	Lock, pad.....	Solomon Andrews.....	Perth Amboy, N. J.....	Jan. 1.
16224	Lock, pad, case for.....	Solomon Andrews.....	Perth Amboy, N. J.....	July 8.
14616	Locks.....	William Maurer.....	New York, N. Y.....	Dec. 16.
14896	Locks.....	Joseph M. Lippincott.....	Pittsburg, Pa.....	April 8.
14348	Locks.....	William H. Atkins.....	Berkshire, N. Y.....	May 13.
15124	Locks.....	M. Erb and F. C. Goffin.....	Newark, N. J.....	May 13.
15239	Locks.....	Henry Isham.....	New Britain, Conn.....	June 17.
15429	Locks.....	Joseph M. Lippincott.....	Pittsburg, Pa.....	July 1.
15589	Locks.....	Hjalmar Wynblad.....	New York, N. Y.....	Aug. 5.
15840	Locks.....	G. W. Coppertol.....	New York, N. Y.....	Aug. 19.
15802	Locks.....	W. H. Butler.....	Ohio, N. Y.....	Sept. 30.
14618	Locks, door.....	Andrew Patterson.....	New York, N. Y.....	Oct. 28.
14714	Locks, door.....	John B. Erb.....	Pittsburg, Pa.....	April 8.
15446	Locks, face-plate for.....	Thos. B. Atterbury and Wm. Warwick, assignors to Warwick, Atterbury, & Co.....	Strasburg, Pa.....	April 22.
14759	Locks, pad.....	James Harrison, jr.....	Pittsburg, Pa.....	July 29.
16060	Lock, spring-latch and.....	William A. Ives.....	Milwaukee, Wis.....	Jan. 8.
			New Haven, Conn.....	Nov. 14.

15119	Metal beams.....	Joshua K. Ingalls, assignor to M. H. Howell.	Brooklyn, N. Y.	June 10.
15286	Metal, cast, securing pearl ornaments in handles of.....	C. Dickinson and W. Bellamy.....	Newark, N. J.	July 8.
16118	Metal, lathes for planing.....	William W. Hubbard.....	Boston, Mass.	Nov. 25.
16250	Metallic slats for blinds, machine for making.....	John S. Sanson and William P. Farrand.	Philadelphia, Pa.	Dec. 16.
16166	Metallic tubes, casting.....	James Smith, jr.....	Norton, Mass.	Dec. 2.
15899	Metal pipe, bending, machine for..... Metal pipes, lining, with gutta-percha. (See Class IV, letter G.)	J. Perkins and W. H. Burnett.....	Newark, N. J.	Oct. 14.
15413	Metal planers.....	E. C. Cleveland.....	Worcester, Mass.	July 29.
15379	Metal planers, cutter-stock for.....	Joshua Mason.....	Pateron, N. J.	July 22.
15538	Metal, planing.....	Chester Van Horn.....	Springfield, Mass.	Aug. 12.
14279	Metal, rolling.....	George H. Corliss and Ellaha Harris.....	Providence, R. I.	Feb. 19.
14332	Metal, sheet, bending.....	John Wright.....	Plantville, Conn.	Feb. 26.
14049	Metal, sheet, bending, machine for.....	Reuben Brady.....	New York, N. Y.	Jan. 8.
15964	Metal, sheet, machine for bending.....	George W. Burling.....	Trenton, N. J.	Oct. 28.
15069	Metal, sheet, shears for.....	Henry C. Dole.....	Adrian, Mich.	June 10.
14878	Metal, sheet, working.....	S. B. Miller and E. W. Whitehead.....	Newark, N. J.	May 13.
14738	Metal, sheet, working in.....	Samuel R. Shepard and Orson W. Stow.	Plantville, Conn.	April 22.
14916	Metal, sheet, working in.....	I. B. Holmes.....	Cincinnati, Ohio.	May 20.
14115	Metals, casting.....	Ezra Ripley.....	Troy, N. Y.	Jan 15.
16001	Metals, cutting.....	Robert Anderson and Aaron H. Vancleve.	Trenton, N. J.	Nov. 4.
15733	Metals, granulating.....	John Feix.....	San Francisco, Cal.	Sept. 16.
15190	Metals, tool for cutting.....	John Mooney.....	Providence, R. I.	June 24.
14551	Metal tubes, seamless, making.....	William F. Brooks.....	New York, N. Y.	April 1.
15348	Metal tubes, seamless, making.....	John J. Speed, jr., and John A. Bailey.....	Detroit, Mich.	July 15.
15513	Metal ware, sheet, manufacture of.....	Theo. Gomme and C. E. A. Beaugrand.....	Paris, France.	Aug. 12.
14724	Moulding, flasks for.....	James J. Johnston.....	Alleghany, Pa.	April 22.
14637	Moulding, pipe, core-bar for.....	John Demarest, assignor to the J. L. Mott Iron Works.	Mott Haven, N. Y.	April 8.
15054	Nail-machines.....	Daniel Dodge.....	Keeseville, N. Y.	June 3.
15910	Nail machines.....	P. A. Wilbur.....	New Castle, Pa.	Oct. 14.
15934	Nail-plate feeding.....	P. A. Wilbur.....	New Castle, Pa.	Oct. 21; antedated
15515	Nail-plate feeding apparatus.....	Adolphus Heddaeus.....	Pittsburgh, Pa.	Oct. 14.
14474	Nail-plate feeding-machines.....	John P. Sherwood.....	Fort Edward, N. Y.	Aug. 12.
14011	Nut-box.....	Richard H. Cole.....	St. Louis, Mo.	Mar. 18.
14452	Nut-Machine.....	Robert Griffith.....	Alleghany, Pa.	Jan. 1. Mar. 18.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15001	Nut-machines.....	Richard H. Cole.....	St. Louis, Mo.....	June 3.
15881	Nut-machines.....	William E. Ward.....	Portchester, N. Y.....	Oct. 7.
16142	Nut-machines.....	Robert Griffiths.....	Philadelphia, Pa.....	Dec. 2.
16188	Nut-machines.....	Charles Ratcliff.....	Cincinnati, Ohio.....	Dec. 9.
15003	Nuts, making.....	Richard H. Cole.....	St. Louis, Mo.....	June 3.
15004	Nuts, metallic, machine for polishing.....	R. H. Cole and J. C. Cole.....	St. Louis, Mo.....	June 3.
16039	Ores, &c, crushing, rollers for.....	William Henry Plumb.....	New York, N. Y.....	Nov. 4.
14182	Ore-washer.....	William Ball.....	Chicopee, Mass.....	Feb. 5.
14388	Ore-washer.....	William L. Carter.....	Marietta, Pa.....	Mar. 11.
15544	Ore-washer.....	Hezekiah Bradford, assignor to Horatio Bogert.....	New York, N. Y.....	Aug. 12.
15827	Ore-washer.....	Samuel Thomas.....	Allentown, Pa.....	Sept. 30.
14234	Pins in paper, sticking.....	Thaddeus Fowler.....	Waterbury, Conn.....	Feb. 12.
15371	Pins in paper, sticking.....	Charles Atwood, deceased, Lydia Atwood, and C. O. Crosby, administrators of.....	New York, N. Y.....	Oct. 14.
15877	Pins in paper, sticking.....	Walker B. Bartram.....	Waterbury, Conn.....	Oct. 14.
15111	Pins, japanning.....	John J. Howe and Truman Piper, assignors to Howe Manufacturing Company.....	Derby, Conn.....	June 10.
15091	Pins, machine for sticking.....	J. B. Terry.....	Hartford, Conn.....	June 10.
15112	Pins, machine for sticking.....	John J. Howe and Truman Piper, assignors to Howe Manufacturing Company.....	Derby, Conn.....	June 10.
16199	Pins, machines for sticking.....	Chas. Atwood, deceased, Lydia Atwood and C. O. Crosby, administrators of.....	New York, N. Y.....	Dec. 9.
15874	Pins, papering.....	Chas. Atwood, deceased, Lydia Atwood and C. O. Crosby, administrators of.....	New York, N. Y.....	Oct. 14.
15404	Pins upon paper or any other material, machine for sewing.....	E. S. Woodford, assignor to James R. Keeler.....	Winchester, Conn.....	July 22.
15860	Pipe fittings, &c, machine for finishing.....	Caleb C. Walworth.....	Boston, Mass.....	Oct. 7.

15620	Pipe, lead, making.....	John Robertson.....	Brooklyn, N. Y.....	Aug. 26.
14701	Puddle-ball squeezer.....	Shubael Wilder.....	Newcastle, Pa.....	April 15.
14242	Puddler's balls, elevators for.....	S. S. Jackman.....	Lock Haven, Pa.....	Feb. 12.
14166	Punching-machine.....	Rufus Porter.....	Washington, D. C.....	Jan. 29.
14866	Punching-measure.....	Edward Heath.....	Fowlersville, N. Y.....	May 13.
	Reaming and tapping gas-fittings, machine for. (See Class V, Letter G.)			
14357	Rifle-boxes.....	F. R. Ford.....	Ophir, Cal.....	Mar. 4.
14137	Riveting-machine.....	Emmons Manley.....	Marion, N. Y.....	Jan. 22.
14897	Rolling file-blanks.....	Jas. N. Aspinwall, assignor to himself and Henry E. Staff.	Newark, N. J.....	May 13.
14552	Rolling railway-bars.....	John W. Brown.....	Savage Iron Works, Md.....	April 1.
16087	Safe, burglar proof.....	R. G. Holmes and W. H. Butler.....	New York, N. Y.....	Nov. 18.
14600	Sash-fastener.....	John J. Crooke.....	New York, N. Y.....	April 8.
15523	Sash-fastener.....	William Patton.....	Towanda, Pa.....	Aug. 12.
14028	Sash-lock.....	Joseph Marsh.....	Rochester, N. Y.....	Jan. 1.
15343	Sash-lock.....	Lucius Paige.....	Cavendish, Vt.....	July 15.
15857	Sash-lock.....	O. Redmond.....	Rochester, N. Y.....	Oct. 7.
15939	Sash, window, balance and fastener for.....	W. Worthen.....	Danville, N. H.....	Oct. 21.
	Scissors. (See Class XVII.)			
15700	Screw-cutter.....	James W. Lyon.....	Brooklyn, N. Y.....	Sept. 9.
15932	Screw-machine.....	John Moore.....	Madison, Ind.....	Oct. 21.
14041	Screw-machinery.....	Cullen Whipple, assignor to New Eng- land Screw Company.	Providence, R. I.....	Jan. 1.
15052	Screws, making.....	Cullen Whipple, assignor to New Eng- land Screw Company.	Providence, R. I.....	June 3.
14367	Scythe-rifles.....	Eugene J. Post.....	Vienna, N. J.....	Mar. 4.
16290	Shears, sheep. (See Class I.)			
16038	Shears, tinnerns'.....	Levi Skeels.....	Ostrander, Ohio.....	Dec. 23.
15064	Shutter-fastener.....	D. M. Lawrence.....	Cincinnati, Ohio.....	Nov. 4.
15257	Shutter-operator.....	Hiram Collins.....	Salisbury, Conn.....	June 10.
15416	Shutter-operator.....	Charles R. Edwards.....	Niagara city, N. Y.....	July 8.
15891	Shutters, bolts for.....	James R. Creighton.....	Boston, Mass.....	July 29.
14912	Shutters, fastening, swing bolt for.....	Philip Warner.....	Lancaster, Pa.....	June 10.
14563	Slide-rests.....	John Gunner, jr.....	New York, N. Y.....	May 20.
	Soldering, furnace for. (See Class V, letter F.)			
14176	Soldering iron.....	Albert V. Hill.....	Hinsdale, N. Y.....	April 1.
		Daniel Dod, assignor to himself and Hen- ry F. Read.	Brooklyn, N. Y.....	Jan. 29.

Table 1. *Changes in the use of Periodicals Search - Checklist*

Date	Number of searches	Periodicals	Books	Library Search
1970-1974	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000
1975-1979	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000
1980-1984	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000
1985-1989	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000	1000000 1000000 1000000 1000000 1000000

14252	Wiring blind rods, machine for.....	Thaddeus F. St. John.....	Le Roy, N. Y.....	Dec. 16.
14249	Wrench.....	Elisha F. Newton.....	Green Island, N. Y.....	Feb. 12.
14231	Wrench.....	William Baxter.....	Newark, N. J.....	Feb. 12.
14243	Wrench.....	Ferdinand Koehnold.....	Bridgeport, Conn.....	Feb. 12.
14424	Wrench.....	Erastus Tracy.....	Troy, N. Y.....	Mar. 11.
14779	Wrench.....	Bradford Rowe.....	Albany, N. Y.....	April 29.
15432	Wrench.....	Lorenzo D. Gilman.....	Troy, N. Y.....	Aug. 5.
15184	Wrench for gas pipe, &c.....	Gustavus A. Jenks.....	Worcester, Mass.....	June 24.
14546	Wrenches.....	Halsey D. Walcott, assignor to H. D. and M. E. Walcott.....	Pawtucket, Mass.....	Mar. 25.
14529	Wrenches.....	William Warwick.....	Pittsburg, Pa.....	Mar. 25.
14571	Wrenches.....	Philip McManus.....	Brunswick, N. Y.....	April 1.
16159	Wrenches.....	Orin O. Witherell.....	New York, N. Y.....	Dec. 2.

CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14322	Binding guides.....	James S. McCurdy.....	New York, N. Y.....	1856. Feb. 26.
15836	Bleaching, washing and, use of the dash-wheel for.	James Wallace, jr.....	Glasgow, North Britain.....	Sept. 30. England, June 26, 1855.
15872	Button-holes, guides for working.....	Otis Avery.....	Bethany, Pa.....	Oct. 14.
16319	Calico printing machines, movement for the doctors of. (See Class XVIII, letter P.)	John Worsley.....	Providence, R. I.....	Dec. 23.
15781	Carding engines, No. 1.....	A. D. Shattuck.....	Grafton, Mass.....	Sept. 23.
15784	Carding engines, No. 2.....	A. D. Shattuck.....	Grafton, Mass.....	Sept. 23.
16196	Carding engines, cleaning the top flats of.....	W. H. Walton.....	Brooklyn, N. Y.....	Dec. 9.
15313	Carding engines, machinery for cleaning the top flats of.	Horace Woodman.....	Biddeford, Me.....	July 8.
14461	Carding-machines, stripping top flats of.....	George Wellman.....	Lowell, Mass.....	Mar. 18. England, Nov. 25, 1853.

Classified List of Patents issued.—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15016	Carding-machines, wool	Foster Nowell.....	Lowell, Mass	1856.
15005	Card teeth, for machine cards	John L. Tuttle	New York, N. Y.	June 3.
15767	Carpeting, ingrain, manufacturing	David B. Kerr	New York, N. Y.	Oct. 14.
14585	Carpet lining, machines for making	John R. Harrington.....	Dayton, Ohio.....	Sept. 23.
	Cloth, elastic, rubber, processes for making. (See Class IV, letter P.)			April 1.
16275	Clothing, card, trimming.....	E. B. Howe.....	Lowell, Mass	Dec. 23.
14659	Cloth, stretching, spreading rollers for.....	Jonathan J. Hillard.....	Fall River, Mass.....	April 15.
14725	Cotton cleaner.....	Jas. H. Kinyon and Jas. Hollingsworth..	Chicago, Ill	April 22.
14965	Cotton gins.....	William B. Lindsey.....	New Orleans, La.....	May 27.
15381	Cotton gins.....	James B. Miles	Chicot, Ark	July 22.
15906	Cotton gins.....	John L. Tuttle.....	New York, N. Y.	Oct. 14.
15930	Cotton gins.....	James B. Mell	Riceboro', Ga.....	Oct. 21.
16022	Cotton gins.....	Wilson A. Purdon	Jackson, Miss.....	Nov. 4.
16096	Cotton gins.....	C. A. McPhetridge	St. Louis, Mo.....	Nov. 18.
15904	Cotton gins and machine cards, manufacturing cylinders for.	John L. Tuttle	New York, N. Y.	Oct. 14.
15138	Cotton gins: roller, feeder for	L. John Mallard and Wm. S. Baker	Riceboro', Ga.....	June 17.
15703	Delaines, manufacturing, process of	John Marland	West Bridgewater, Mass.....	Sept. 9.
15585	Fabrics, textile, water-proofing	Benjamin Weigert	New York, N. Y.	Aug. 19.
16293	Fibres, vegetable, preparing, for stuffing mat- tresses and cushions.	Werner Staufen.....	Prussia	Dec. 23; in England, Nov. 2, 1855.
16149	Fibrous manufactures, drying cylinders for....	Horace W. Penalee.....	Malden Bridge, N. Y.....	Dec. 2.
14559	Hat-bodies and other articles, cloths for felting.	William Fuzzard.....	Charlestown, Mass	April 1.
15508	Hat-bodies, felting.....	E. R. Barnes and Jas. B. Blakslee.....	Brookfield, Conn.....	Aug. 12.
15627	Hat-bodies, felting, machinery for.....	Joseph Thomas	Brooklyn, N. Y.	Aug. 26.
14845	Hat-bodies, machinery for felting.....	James S. Taylor.....	Danbury, Conn	May 6.
15261	Hat-bodies, machinery for felting.....	Joseph Thomas.....	Brooklyn, N. Y.	July 1.
15290	Hat-bodies, machinery for felting.....	William Fuzzard.....	Cambridgeport, Mass.....	July 8.
15375	Hat-bodies, machines for felting.....	Lausing E. Hopkins	Brooklyn, N. Y.	July 24.

15623	Sewer needles, filling, machinery or	S. F. Stanton, assignor to J. M. and S. F. Stanton.	Manchester, N. H.	Aug. 26.
14283	Sewing-guides.	Seth P. Chapin.	New York, N. Y.	Feb. 19.
14022	Sewing-machines	P. L. Slayton	Madison, Ind.	Jan. 1.
14141	Sewing-machines	John O'Neil.	Xenia, Ohio	Jan. 22.
14207	Sewing-machines	Alfred Swingle, assignor to Elmer Townsend.	Boston, Mass.	Feb. 5.
14324	Sewing-machines	T. J. W. Robertson.	New York, N. Y.	Feb. 26.
14393	Sewing-machines	Henry R. David.	New York, N. Y.	Mar. 11.
14433	Sewing-machines	W. C. Watson, assignor to Ira W. Gregory.	New York, N. Y.	Mar. 11.
1445	Sewing-machines	Isaac M. Singer	New York, N. Y.	Mar. 18.
15396	Sewing-machines	A. Swingle, assignor to E. Townsend.	Boston, Mass.	July 22.
15469	Sewing-machines	Sherburn C. Blodgett.	Philadelphia, Penn.	Aug. 5; antedated Feb. 5, 1856.
15470	Sewing-machines	Joseph Bond, jr.	Philadelphia, Penn.	Aug. 5.
15635	Sewing-machines	A. F. Johnson, assignor to himself and F. A. Houghton.	Boston, Mass.	Aug. 26.
15695	Sewing-machines	Charles R. Gardner.	Detroit, Mich.	Sept. 9.
16026	Sewing-machines	S. H. Roper.	Roxbury, Mass.	Nov. 4.
16130	Sewing-machines	Isaac M. Singer.	New York, N. Y.	Nov. 4.
16136	Sewing-machines	William C. Watson, assignor to Watson, Wooster, & Knight	New York, N. Y.	Nov. 25.
16234	Sewing-machines	James E. A. Gibbs	Mill Point, Va.	Dec. 16.
16237	Sewing-machines	Lewis Jennings	New York, N. Y.	Dec. 16.
16281	Sewing-machines	William R. Landfear.	Manchester, Conn.	Dec. 23.
16321	Sewing-machines	Jerome B. Woodruff.	Washington, D. C.	Dec. 23.
16315	Sewing-machines	A. F. Johnson and F. A. Houghton.	Boston, Mass.	Dec. 23.
14956	Sewing machines, cases for.	William O. Grover.	Boston, Mass.	May 27.
15402	Sewing-machines, folding guides for.	Burritt C. Boyes, assignor to B. C. Boyes and H. Dercum.	Philadelphia, Penn.	July 22.
15020	Sewing-machines for binding hats.	Isaac M. Singer	New York, N. Y.	June 3.
16120	Sewing-machines, stitches for.	A. F. Johnson	Boston, Mass.	Nov. 25.
	Sewing-pins upon paper or any other material, machine for. (See Class II, letter P.)			
15535	Spinning frames.	Thomas W. Taylor	Cannelton, Ind.	Aug. 12.
16028	Spinning, throstle, machine.	Joel Smith	Northbridge, Mass.	Nov. 4.
14482	Spinning wheels.	Lyman Wight.	Benton, Penn.	Mar. 18.
15131	Traveller, brushes for cleaning	Henry S. Houghton	Blackstone, Mass.	June 17.

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14858	Thread, trebling single, machinery for.....	Lucius and Ira Dimock	Hebron, Conn.....	May 13.	1856.
14969	Thread, winding, from skeins.....	Marcus Ornebee.....	Boston, Mass.....	May 27.	
16164	Thread, covering, with wool.....	A. L. Fuller	Clinton, Mass.....	Dec. 2.	
15308	Warp, dressing, brushes for	Samuel Taylor	Cambridge, Mass.....	July 8.	
14061	Weavers' harness, machinery for making	George L. Jenks	Providence, R. I.....	Jan. 8.	
16029	Weaving long warps.....	John C. Smith.....	New Hartford, Conn.....	Nov. 4.	
15415	Weaving seamless bags, harness for	Algernon L. Cole.....	Windham, Me.....	July 29.	
16248	Weaving shade-cord, machinery for.....	Thomas Nelson	Troy, N. Y.....	Dec. 16.	
14463	Winding frames, cone tubes for	John McCrone	Thompsonville, Conn.....	Mar. 18.	
	Wool-breaking, compositions for. (See Class IV, Letter C.)				
15856	Wool, cleaning, machinery for.....	Andrew W. Putnam	Brooklyn, N. Y.....	Oct. 7.	
15268	Wool, combing, machinery for.....	Wm. H. Walton, assignor to W. H. Walton and J. E. Winanta.	Brooklyn, N. Y.....	July 1.	
	Woollen and other fabrics, printing, machinery for. (See Class XVIII, Letter P.)				
	Woven wire, process of painting or varnishing. (See Class IV, Letter P.)				
14129	Yarn-dressing frames	Abner J. Sutherland.....	Lowell, Mass.....	Jan. 15.	
16117	Yarns, cotton, manufacturing.....	George G. Henry.....	Mobile, Ala.....	Nov. 25.	
14315	Yarns, felted, manufacturing	Moses A. Johnson	Lowell, Mass.....	May 6.	

CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including medicines, dyeing, color-making, distilling, soap and candle making, mortars, cements, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent
14722	Acid, phosphoric, preparing, as a substitute for other solid acids.	E. N. Horsford	Cambridge, Mass.	1856. April 22.
15222	Acid, sulphuric, concentrating apparatus for..	Wm. T. Clough	Newark, N. J.	July 1.
15632	Ale and beer coolers	James Macintire	Somerville, Mass.	Sept. 2.
15957	Alkalies, caustic, devices for putting up.....	George Thompson	East Tarentum, Pa.	Oct. 21.
15804	Alloys, journal box	John Fidler	New Albany, Ind.	Sept. 30.
15934	Alum, making, preparing clay for	Henry Davis Pochin	Salford, Great Britain	Oct. 21; in England, January 30, 1865.
14925	Ash-leaching apparatus	Philip Perdw and Alex. W. Brinkerhoff.	Wyandot, Ohio	May 20.
15956	Bagasse furnaces. (See Class V, Letter F.)	William Thomas, jr.	Hingham, Mass.	Oct. 21.
15953	Blackening ivory, apparatus for	John Phyfe	New York, N. Y.	Oct. 28.
15590	Bleaching ivory, frames for	A. C. Breckenridge, assignor to Julius Pratt & Co.	Meriden, Conn.	Aug 19.
16100	Bleaching process.	Julius A. Roth	Philadelphia, Pa.	Nov. 18.
	Bleaching, washing and, use of the dash wheel for. (See Class III, Letter B.)			
14662	Candle cutting apparatus	John Jones	Brooklyn, N. Y.	April 15.
16211	Candle dipping machine	C. A. McPhetridge	St. Louis, Mo.	Dec. 9.
14376	Candle dipping machines	Vincenzo Squarza	New York, N. Y.	Mar. 4.
15668	Candle moulding machine	John Robington	New Brighton, Pa.	Sept. 2.
15968	Candle mould machine	William C. Childs	Boston, Mass.	Oct. 28.
16056	Candle mould machine	August Hengstenberg	Muscantine, Iowa	Nov. 11.
14397	Candles, making, preparation of tallow for	Francois Garcin	Philadelphia, Pa.	Mar. 11.
15821	Candles, many-wicked	Benjamin D. Sanders	Holliday's Cove, Va.	Sept. 30.
16208	Cement, incorporating bituminous liquids with wet earths for a.	W. H. Johnson	Springfield, Ill.	Dec. 9.
15275	Cements, roofing	Horace Billings	Beardstown, Ill.	July 8.
16304	Charcoal burning	Andrew Grimes, assignor to Charles Day.	Lancaster, N. Y.	Dec. 23.
16170	Composition, alloy	Time Brown	Georgetown, N. Y.	Dec. 9.

Classified List of Patents issued—Continued.

No.	Invention or discovery.	Patentees.	Residence.	Date of patent.
14037	Compositions for breaking wool.....	Andrew H. Ward, Jr.....	Boston, Mass.....	1856.
14832	Compositions for stuffing leather.....	John Rose.....	Newark, N. J.....	Jan. 1.
15161	Compositions for working steel.....	Horace Vaughn.....	Providence, R. I.....	May 6.
	Compositions, pre-tanning. (See Class XVI, letter T.)			June 17.
15551	Compound, plastic.....	Lewis Buckholz.....	Richmond, Va.....	Aug. 19.
14911	Compounds, artificial decoloring.....	Francis Gerau.....	New York, N. Y.....	May 20.
15563	Compounds, felting.....	Lansing E. Hopkins.....	Brooklyn, N. Y.....	Aug. 19.
15520	Compounds, paint, vehicle for.....	F. Kulhmann.....	Lille, empire of France.....	Aug. 12.
15806	Compound wherewith to manufacture paint.....	Isaac Gattman.....	Philadelphia, Pa.....	Sept. 30.
14053	Disinfecting fecal matter.....	D. Contaret.....	New York, N. Y.....	Jan. 8.
15959	Dying.....	John P. Derby, assignor to Salisbury Manufacturing Co.....	Amesbury, Mass.....	Oct. 31.
15361	Dye-stuff, vegetable, preparing a.....	Friedrich E. Schmidt.....	New York, N. Y.....	July 15.
14418	Extracts, apparatus for making.....	Abraham Steers.....	Medina, N. Y.....	Mar. 11.
15158	Fats, saponifying.....	George F. Wilson and George Payne.....	Belmont, Vauxhall, England.....	June 17.
15517	Filtering sand for cider.....	Ira Holmes.....	Leicester, N. Y.....	Aug. 12.
16129	Gas cock and swinging joint.....	Charles F. Thieme.....	Philadelphia, Pa.....	Nov. 25.
14368	Gaseous pressure, method of bottling fluids under.	A. Quantin.....	Philadelphia, Pa.....	Mar. 4.
15973	Gas generator.....	Charles A. Howard.....	Pontiac, Mich.....	Oct. 28.
14926	Gas generators, construction of.....	Max Petteukofer and Carl Ruland.....	Munich, Bavaria.....	May 20; Bavaria, Feb 24, 1851.
14045	Gas, illuminating, making.....	N. Aubin.....	Albany, N. Y.....	Jan. 8.
15267	Gas, purifiers, dry lime.....	C. F. Werner and C. Deutechmann.....	New York, N. Y.....	July 1.
15010	Gas retort bench, arrangement of a.....	John G. Hock.....	Newark, N. J.....	June 3.
14934	Gas retort cleaners.....	Samuel H. and Matthew C. Walker.....	Lancaster, Pa.....	May 20.
16075	Gas retort fastening, copper ring.....	William H. St. John.....	New York, N. Y.....	Nov. 11.
14913	Gas retort fastenings.....	John G. Hock.....	Newark, N. J.....	May 20.
14996	Gas retorta, feeding apparatus for.....	N. Aubin.....	Albany, N. Y.....	June 3.
15376	Gas stop cocks.....	James Humphrey.....	Boston Mass.....	July 22.

		Henry G. Tyer and John Helm	Ballard Vale, Mass.....	May 6; ante-dated Jan. 9.
14514	Gum elastic cloth, making	James Reynolds.....	New York, N. Y.	May 27.
14672	Gutta percha, apparatus for cleaning	James Reynolds.....	New York, N. Y.	July 29.
15439	Gutta percha, apparatus for covering wire with	James Reynolds.....	New York, N. Y.	Dec. 9.
16215	Gutta percha cord, making	James Reynolds.....	New York, N. Y.	
	Gutta percha, "dumb jockey," the "cross" or "horus" of saddle-tree being made of. (See Class XVI, letter S.)	James Reynolds.....	New York, N. Y.	June 10.
15087	Gutta percha, feed-apparatus for working.....	A. D. Puffer	Somerville, Mass.....	May 20.
14329	Gutta percha, lining metal pipes with.....	James Reynolds.....	New York, N. Y.	June 10.
15086	Gutta percha tubing, mandrils for making.....			
	India-rubber belting and banding, manufacture of. (See Class XII, letter B.)			
15067	India-rubber, cleaning.....	Austin G. Day.....	Seymour, Conn	June 10.
14911	India-rubber cloths, elastic, repairing	Nathaniel Hayward.....	Colchester, Conn.....	May 6.
15947	India-rubber hose, modes of making	Jacob H. Howell.....	Ansonia, Conn	Oct. 21.
14637	India-rubber, manufacture of.....	Nathaniel Hayward.....	Colchester, Conn.....	April 15.
16069	India-rubber, process for cleaning	T. Sault.....	Seymour, Conn	Nov. 11.
16269	India-rubber thread, machines for cutting.....	Henry Davenport	New York, N. Y.	Dec. 23.
15531	India-rubber, treating.....	William F. Shaw.....	Boston, Mass	Aug. 12.
15998	India-rubber, vulcanized, working over.....	Henry Toratrick	Hoboken, N. J.	Oct. 28.
15942	Lard-rendering kettles.....	John J. Bate	Brooklyn, N. Y.	Oct. 21.
15301	Liquids used as a motive power.....	John C. Fr. Salomon.....	Baltimore, Md.....	July 22.
	Lubricating car-axle and other journals. (See Class X, letter A.)			
14791	Lubricating grist-mill spindles, apparatus for.....	Clayton Brown, sr.....	Richmond, Ind.....	May 6.
16298	Lubricating spindle steps.....	Joseph Welch	Philadelphia, Pa.....	Dec. 23.
	Lubricating the sheave-pin of ship's blocks, means for. (See Class VII, letter S.)			
15690	Lubricating throstle spindles	George W. Doherty and Thos. G. McLaughlin.	Crozer ville, Pa.....	Sept. 9.
14236	Lubricator	William Gee.....	New York, N. Y.	Feb. 12.
14352	Lubricator	W. E. Everett.....	New York, N. Y.	Mar. 4.
14549	Lubricator	Edw. J. Baker	Baltimore, Md.....	April 1.
14797	Lubricator	Abel Braer	Saugatuck, Conn.....	May 6.
15775	Lubricator	N. W. Pomeroy	Meriden, Conn.....	Sept. 23.
16018	Lubricator	James F. Monroe	Fitchburg, Mass.....	Nov. 4.
14163	Mastic for covering walls.....	Adolph C. Moetue.....	Geneva, Ill	Jan. 29.
15553	Milk, concentration of.....	Gail Borden, jr.....	Brooklyn, N. Y.	Aug. 19.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
				1836.
16255	Oil-box for axles with conical journals. (See Class XII, letter O.)	Richard Shroder, assignor to J. L. Russell, R. Shroder, and A. Anderson.	Darlington, Pa.	Dec. 16.
15643	Oil, coal, apparatus for	Cummings, Cherry	Pittsburg, Pa.	Sept. 2.
15506	Oil, crude, from mineral coal, distilling apparatus for.	L. & W. Atwood	Waltham, Mass.	Aug. 12.
15505	Oil from bitumens, preparing	L. & W. Atwood	Waltham, Mass.	Aug. 12.
14610	Oil from cannel coal, production of.	Augustus A. Hayes, assignor to George Ashman and Charles Phelps	Boston, Mass.	April 8.
15642	Oil from cotton seed, processes for extracting	Cummings Cherry	Springfield, Mass.	Sept. 2.
15644	Oil obtained from mineral coal, purifying, apparatus for.	Cummings Cherry	Pittsburg, Pa.	Sept. 2.
15418	Oil, preparation of drying, from oils extracted from bituminous minerals.	Samuel Downer and Joshua Merrill	Boston, Mass.	July 29.
14042	Oils, lubricating, pyrogenous.	Philo Marsh, assignor to Marsh & Howland.	South Adams, Mass.	Jan. 1.
15243	Oils, treating.	Andrew Lanergan.	Boston, Mass.	July 1.
15972	Pastilles, disinfecting.	J. Anthony, Gaussardia.	Washington, D. C.	Oct. 28.
14464	Powder, blasting. (See Class IX, letter B.)	R. McMullin.	New Brunswick, N. J.	Mar. 18.
14457	Processes for making elastic rubber cloth.	Edward R. Kernan.	Pittsburg, Pa.	Mar. 18.
15950	Processes for making paper from straw. (See Class III, letter P.)	Tony Petitjean.	Tottenham Court Road, England.	Oct. 21.
15542	Processes for making transparent window-shades.	W. Ziervogel.	Treskon, Pa.	Aug. 12.
16179	Processes for silvering mirrors.	Elie Joseph Hainaut.	Kingdom of Belgium	Dec. 9.
15953	Processes of separating silver from the ore.	Joseph Poloux.	New York, N. Y.	Oct. 21.
14320	Process of machining grain.	William Lincoln.	Oakham, Mass.	Feb. 20.
	Process of coating metals with metals.			
	Process of painting or varnishing woven wire.			

1. *Generalized linear model* 111

2. *Generalized linear mixed model* 111

3. *Generalized linear mixed model with random effects* 111

4. *Generalized linear mixed model with random effects and covariates* 111

5. *Generalized linear mixed model with random effects and covariates and a correlation structure* 111

6. *Generalized linear mixed model with random effects and covariates and a correlation structure and a correlation structure* 111

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1958	1	Department	1	2	3	4	5	6	7	8	9	10
1958	1	Special	1	2	3	4	5	6	7	8	9	10
1958	1	Index	1	2	3	4	5	6	7	8	9	10

16111	Cooking apparatus, alcohol	Thomas G. Clinton	Washington, D. C.	Nov. 25.
15156	Cooking apparatus, water heaters surrounding fire-pots of	Edward Whiteley	Boston, Mass.	June 17.
14629	Cooking by steam, boilers for	Edward Whiteley	Boston, Mass.	April 8.
14340	Cooking with quick lime, apparatus for	W. W. Albrow	Binghampton, N. Y.	Mar. 4.
14510	Cooling and ventilating rooms, &c., method of	A. S. Lyman	New York, N. Y.	Mar. 25.
16010	Coal or draught accelerators for steamers	P. C. Guion	Cincinnati, Ohio	Nov. 4.
14181	Dryers, corn	Solomon Bernheisel	Elliottsburg, Pa.	Feb. 5.
14494	Dryers, fruit or grain	Charles W. Davis	Newark city, N. J.	Mar. 25.
16259	Drying grain in the mass, apparatus for	John C. Pedrick	Washington, D. C.	Dec. 16.
14586	Drying wet grain, &c., machines for	Stephen V. Appleby	New York, N. Y.	April 8.
	Dust from railroad cars, method of excluding. (See Class X, letter C.)			
15331	Fire-backs for fire-places	Samuel M. Echols	Lafayette, Ala.	July 15.
15089	Fire-engines, method of applying horse-power to	David Russell	Lockport, N. Y.	June 10.
14447	Fire-places	Calvin Dodge	Pittsburg, Pa.	Mar. 18.
15362	Fire-places, fenders for	John W. Truslow	Lewisburg, Va.	July 15.
14252	Fires, forge. (See Class II, word "Forge.")	Lea Pusey	Philadelphia, Pa.	Feb. 12.
15271	Fires, method of extinguishing	Robert B. Armitage	Philadelphia, Pa.	July 8.
15628	Fuel, method of extinguishing	Robert Courtney	Albany, N. Y.	Sept. 9.
14063	Fuel, artificial	John F. Manahan	Lowell, Mass.	Jan. 8.
14908	Fuel, wet, mode of burning	J. Joseph Eagleton	New York, N. Y.	May 20.
14008	Furnace, annealing	Philo Brown	Waterbury, Conn.	Jan. 1.
14153	Furnace for soldering	George R. Comstock	Manheim, N. Y.	Jan. 29.
16287	Furnace grates, locomotive	John H. H. Perkins	Utica, N. Y.	Dec. 23.
15442	Furnaces, hot-air	Richard Wells	Baltimore, Md.	Sept. 30.
15613	Furnaces	John Liddle	New York, N. Y.	Aug. 26.
14812	Furnaces, air-heating	Abraham Hager and Youngs Allyn	Baton Rouge, La.	May 6.
15481	Furnaces, bagasse	Samuel H. Gilman	New Orleans, La.	Aug. 5.
	Furnaces, blast, fluxing. (See Class II, letter F.)			
14892	Furnaces for heating soldering irons	James Wilson	Brandywine, Del.	May 13.
14298	Furnaces for heating slugs for the use of hat- ters, tailors, and others	Russel Wildman	Charlestown, Mass.	Feb. 19.
15009	Furnaces, gas-consuming	Jacob Green	Philadelphia, Pa.	June 3.
15830	Furnaces for zinc white	Samuel Wetherill	Bethlehem, Pa.	Sept. 30.
15018	Furnaces, glass	Samuel Richards	Philadelphia, Pa.	June 3.

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Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099

14360	Heating buildings by the combination of and burning gas, air, and steam, apparatus for.	Charles H. Johnson.....	Boston, Mass.....	Mar.	4.
14348	Heating of buildings, regulating the arrangement of steam-tubing for.	Robert, Cornelius.....	Philadelphia, Pa.....	Mar.	4.
14317	Lamps.....	William M. Kimball.....	Rochester, N. Y.....	Feb.	26.
15636	Lamps.....	Peter C. Guion and Paul K. Wambaugh, assignors to Paul K. Wambaugh.	Cincinnati, Ohio.....	Aug.	26.
14478	Lamps, argand, for burning rosin oil.....	Isaac Van Bunschoten.....	New York, N. Y.....	Mar.	18.
14248	Lamps, argand, wick-holders for.....	Christopher Moeller.....	Newark, N. J.....	Feb.	12.
14492	Lamps, Carcel, regulating the flow of oil to the wick in.	Abraham Coates.....	New York, N. Y.....	Mar.	25.
15724	Lamps for burning fluids.....	Salmon Bidwell.....	Rochester, N. Y.....	Sept.	9.
14369	Lamps for burning rosin oil.....	Prentice Sargent.....	Newburyport, Mass.....	Mar.	4.
15686	Lamps, fluid, extinguisher for.....	W. B. Carpenter.....	Brooklyn, N. Y.....	Sept.	9.
15198	Lamps, fountain.....	N. Linden.....	Jersey City, N. J.....	June	24.
14984	Lamps, gas burning.....	Solomon Andrews.....	Perth Amboy, N. J.....	June	3.
14727	Lamps, hydrocarbon vapor.....	Alonzo M. Mace.....	Springfield, Mass.....	April	22.
15829	Lamps, hydrocarbon vapor.....	Thomas Varney.....	San Francisco, Cal.....	Sept.	30.
14806	Lamps, lard.....	Samuel Davis.....	New Holland, Pa.....	May	6.
15364	Lamps, lard.....	Jeremiah S. Senseny, assignor to himself and G. H. Merklein.	Chambersburg, Pa.....	July	15.
15172	Lamps, locomotive.....	Samuel E. Cleveland and H. B. Cleveland.	Buffalo, N. Y.....	June	24.
14942	Lamps, locomotive and railroad.....	John Stuber, assignor to John Carton.....	Utica, N. Y.....	May	20.
15305	Lamps, locomotive reflector.....	Frederick J. Seymour.....	Waterbury, Conn.....	July	8.
16180	Lamps, pocket.....	H. L. Hervey.....	Quincy, Ill.....	Dec.	9.
15547	Lamps, vapor burning.....	Samuel Whittemarsh, assignor to William J. Demorest.	Northampton, Mass.....	Aug.	12.
14201	Lanterns.....	Francis Morandi.....	Boston, Mass.....	Feb.	5.
15782	Lanterns.....	Stclair Shannon.....	Buffalo, N. Y.....	Sept.	23.
14087	Lanterns, glasses of, removable flanch bars for securing the.	Hezekiah Crout.....	Baltimore, Md.....	Jan.	15.
14741	Lanterns, lamps to, method of fastening.....	Emile Sirret and Wm. H. Scott.....	Buffalo, N. Y.....	April	22.
14608	Lanterns, submarine.....	Charles M. Gould and Charles B. Lamb.	Worcester, Mass.....	April	8.
	Matches, friction, machine for manufacturing.				
	(See Class XXII.)				
14229	Oil cans.....	Levi S. Enos.....	Olean, N. Y.....	Feb.	12.
14825	Ovens.....	Jesse Ohmert.....	Mount Morris, Ill.....	May	6.
15753	Ovens.....	H. Ball.....	New York, N. Y.....	Sept.	23.
16143	Ovens.....	John P. Hayes.....	Philadelphia, Pa.....	Dec.	2.

Table 1. *Sampled library types from each country*

Library type	Library name	Country	Library type
1. Academic library	University of Toronto	Canada	Academic library
2. Academic library	University of Alberta	Canada	Academic library
3. Academic library	University of British Columbia	Canada	Academic library
4. Academic library	University of Saskatchewan	Canada	Academic library
5. Academic library	University of Western Ontario	Canada	Academic library
6. Academic library	University of Regina	Canada	Academic library
7. Academic library	University of New Brunswick	Canada	Academic library
8. Academic library	University of Manitoba	Canada	Academic library
9. Academic library	University of Ottawa	Canada	Academic library
10. Academic library	University of Quebec	Canada	Academic library
11. Academic library	University of Windsor	Canada	Academic library
12. Academic library	University of Victoria	Canada	Academic library
13. Academic library	University of Prince George	Canada	Academic library
14. Academic library	University of Northern British Columbia	Canada	Academic library
15. Academic library	University of Northern Iowa	USA	Academic library
16. Academic library	University of South Florida	USA	Academic library
17. Academic library	University of Illinois	USA	Academic library
18. Academic library	University of Michigan	USA	Academic library
19. Academic library	University of Wisconsin	USA	Academic library
20. Academic library	University of California	USA	Academic library
21. Academic library	University of Texas	USA	Academic library
22. Academic library	University of Arizona	USA	Academic library
23. Academic library	University of Colorado	USA	Academic library
24. Academic library	University of Nevada	USA	Academic library
25. Academic library	University of Idaho	USA	Academic library
26. Academic library	University of Montana	USA	Academic library
27. Academic library	University of Wyoming	USA	Academic library
28. Academic library	University of New Mexico	USA	Academic library
29. Academic library	University of Oklahoma	USA	Academic library
30. Academic library	University of Missouri	USA	Academic library
31. Academic library	University of Kentucky	USA	Academic library
32. Academic library	University of Tennessee	USA	Academic library
33. Academic library	University of Georgia	USA	Academic library
34. Academic library	University of Alabama	USA	Academic library
35. Academic library	University of Mississippi	USA	Academic library
36. Academic library	University of South Carolina	USA	Academic library
37. Academic library	University of North Carolina	USA	Academic library
38. Academic library	University of Virginia	USA	Academic library
39. Academic library	University of Maryland	USA	Academic library
40. Academic library	University of Delaware	USA	Academic library
41. Academic library	University of Pennsylvania	USA	Academic library
42. Academic library	University of Maryland	USA	Academic library
43. Academic library	University of Maryland	USA	Academic library
44. Academic library	University of Maryland	USA	Academic library
45. Academic library	University of Maryland	USA	Academic library
46. Academic library	University of Maryland	USA	Academic library
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69. Academic library	University of Maryland	USA	Academic library
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73. Academic library	University of Maryland	USA	Academic library
74. Academic library	University of Maryland	USA	Academic library
75. Academic library	University of Maryland	USA	Academic library
76. Academic library	University of Maryland	USA	Academic library
77. Academic library	University of Maryland	USA	Academic library
78. Academic library	University of Maryland	USA	Academic library
79. Academic library	University of Maryland	USA	Academic library
80. Academic library	University of Maryland	USA	Academic library
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83. Academic library	University of Maryland	USA	Academic library
84. Academic library	University of Maryland	USA	Academic library
85. Academic library	University of Maryland	USA	Academic library
86. Academic library	University of Maryland	USA	Academic library
87. Academic library	University of Maryland	USA	Academic library
88. Academic library	University of Maryland	USA	Academic library
89. Academic library	University of Maryland	USA	Academic library
90. Academic library	University of Maryland	USA	Academic library
91. Academic library	University of Maryland	USA	Academic library
92. Academic library	University of Maryland	USA	Academic library
93. Academic library	University of Maryland	USA	Academic library
94. Academic library	University of Maryland	USA	Academic library
95. Academic library	University of Maryland	USA	Academic library
96. Academic library	University of Maryland	USA	Academic library
97. Academic library	University of Maryland	USA	Academic library
98. Academic library	University of Maryland	USA	Academic library
99. Academic library	University of Maryland	USA	Academic library
100. Academic library	University of Maryland	USA	Academic library

14720	Stoves, cooking, arrangement of dampers of.	William E. Hayes.....	Geneva, N. Y.	April 22.
14356	Stoves, furnaces, &c., supplementary grating for.	B. F. Foering.....	Philadelphia, Pa.	Mar. 4.
14552	Stoves, gas.....	John Starrett and N. J. Wier.....	Lowell, Mass.	May 13.
14064	Stoves, gas-cooking.....	H. B. Mudge.....	Cincinnati, Ohio.....	Jan. 8.
14940	Stoves, ventilating regulators and damper for.	John Magee, assignor to John Magee and William J. Towne.	Lawrence, Mass.....	May 20.
	Ventilating railroad cars. (See Class X, letter C.)			
	Ventilating ships, etc., method of. (See Class VII, letter S.)			

CLASS VI.—STEAM AND GAS ENGINES, including boilers and furnaces therefor, and parts thereof.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15742	Boiler furnace, locomotive and steam.....	William P. Parrott.....	Boston, Mass.....	Sept. 16.
14230	Boilers, incrustations of, devices for removing.	William E. Everett and M. Minthorne Thompson.	New York, N. Y.....	Feb. 12.
14408	Boilers, steam.....	Leonard Phleger.....	Tamaqua, Penn.....	Mar. 11.
14523	Boilers, steam.....	O. M. Stillman and Stephen Wilcox, jr..	Westerly, R. I.....	Mar. 25.
14555	Boilers, steam.....	F. P. Dimpfel.....	Philadelphia, Penn.....	April 1.
14721	Boilers, steam.....	C. B. Hoard.....	Watertown, N. Y.....	April 22.
15803	Boilers, steam.....	David H. Fowler.....	New Orleans, La.....	Sept. 30.
16262	Boilers, steam.....	John Armstrong.....	New Orleans, La.....	Dec. 23.
14033	Boiler, steam, alarms.....	Thomas Stubblesfield.....	Columbus, Ga.....	Jan. 1.
16092	Boilers, steam, and kettles, combined.....	A. Lapham, assignor to himself and S. Wilkes.	Brooklyn, N. Y.....	Nov. 18.
15870	Boilers, steam, arrangement of means for regulating the draught in.	Pliny E. Chase.....	Philadelphia, Penn.....	Oct. 14.
15579	Boiler, steam cylinder within the, arrangement of.	John S. Shapter.....	New York.....	Aug. 19.
14449	Boilers, steam, feed and blow-off, apparatus for	Jacob Frick.....	Philadelphia, Penn.....	Mar. 18.

Classified List of Patents Issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14191	Boilers, steam, feed-water apparatus to.....	Thomas Firth.....	Cincinnati, Ohio.....	Feb. 5. 1856.
16206	Boilers, steam, feed-water pumps for.....	Erastus W. Ellsworth.....	East Windsor Hill, Conn.....	Dec. 9.
14959	Boilers, steam, floats for.....	F. A. Hoyt.....	Boston, Mass.....	May 27.
16173	Boilers, steam, floats for.....	William S. Blake.....	Boston, Mass.....	Dec. 9.
15424	Boiler, steam, furnaces.....	E. T. Ingalls.....	Haverhill, Mass.....	July 29.
15825	Boiler, steam, grates.....	A. M. Searles.....	Cincinnati, Ohio.....	Sept. 30.
14835	Boilers, steam, heating feed-water apparatus for.	Thomas Sloan.....	St. Louis, Mo.....	May 6.
15494	Boilers, steam, heating feed-water apparatus for.	John R. Sees.....	New York, N. Y.....	Aug. 5.
15324	Boilers, steam, means for controlling feed-water apparatus of.	Benjamin F. Bee.....	Wareham, Mass.....	July 15.
15617	Boilers, steam, water-gauges for.....	Lucius Paige.....	Cavendish, Vt.....	Aug. 26.
16054	Boilers, steam, water-gauges for.....	John C. Harris.....	Savannah, Ga.....	Nov. 11.
16182	Boilers, steam, water-gauges for.....	F. A. Hoyt.....	Boston, Mass.....	Dec. 9.
16130	Condensers and heaters, tubular construction of.	Uel West and Abner Mills.....	New York, N. Y.....	Nov. 25.
14244	Condensers, steam.....	James T. King.....	New York, N. Y.....	Feb. 12.
14954	Engine governor for side-wheel ocean steamers	William B. Godfrey.....	Auburn, Iowa.....	May 27.
15056	Engine, hydro-steam.....	William Baxter.....	Newark, N. J.....	June 10.
14967	Engines, &c., steam, instantaneous governors for.	Wm. W. H. Mead.....	Chester town, N. Y.....	May 27.
14239	Engines, condensing steam, which are used for pumping.	Birdsill Holly.....	Seneca Falls, N. Y.....	Feb. 12.
16202	Engines, hydraulic and steam, cylinder and piston of.	John Underwood.....	Lowell, Mass.....	Dec. 9.
15122	Engines, marine and other, differential governor for.	Charles N. Clow.....	Port Byron, N. Y.....	June 17.
14124	Engines, oscillating.....	A. Wightman and W. Warden.....	Alleghany, Pa.....	Jan. 15.
15625	Engines, steam.....	William A. Clark.....	St. Louis, Mo.....	Sept. 9.
15181	Engines, steam, adjustable cut-offs for.....	Henry J. and Thomas Hawkins.....	Mobile, Ala.....	June 24.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15058	Steam pressure gauges	Samuel W. Brown.....	Lowell, Mass	1856.
15259	Steam pressure indicators and regulators	William M. Storm.....	New York, N. Y.	June 10.
15229	Steam pressure regulators	William S. Gale	New York, N. Y.	July 1.
14500	Steam radiator cocks.....	Stephen J. Gold.....	New Haven, Conn.....	July 1.
14944	Steam stamps, operating.....	William Ball.....	Chicopee, Mass	Mar. 25.
15815	Steam-wagon.....	John Percy.....	Albany, N. Y.	May 27.
	Steam, water, &c., cock for. (See Class XI, Letter C.)			Sept. 30.
14562	Steam-whistles, automatic, on locomotives.....	James Harrison, jr.....	Milwaukee, Wis.....	April 1.
14709	Valve, balanced slide, for steam-engines.....	Alexander Buchanan.....	New York, N. Y.	April 22.
15208	Valve-checks, cut-off, for steam-engines.....	William Wright.....	Hartford, Conn.....	June 24.
14978	Valve-gear for steam-engines.....	Herman Winter.....	New York, N. Y.	May 27.
16171	Valve-gear for steam-engines.....	Alfred S. Beebe.....	Fall River, Mass.....	Dec. 9.
14580	Valve-gear of oscillating engines	William Stephens.....	Pittston, Pa.....	April 1.
14620	Valve governor, for steam engines	H. H. Smith.....	Cincinnati, Ohio.....	April 8.
14516	Valve-motion for oscillating engines.....	Horatio O. Perry.....	Buffalo, N. Y.	Mar. 25.
15576	Valve-motions for steam-engines.....	Edward S. Renwick.....	New York, N. Y.	Aug. 19.
16227	Valve-motions for steam-engines.....	John Butler.....	Dunmore, Pa.....	Dec. 16.
14225	Valves and exhaust passages of steam-engines	Charles W. Copeland.....	New York, N. Y.	Feb. 12.
15207	Valves, cut-off, for steam-engines, operating...	William Wright.....	Hartford, Conn.....	June 24.
14649	Valves, cut-off, of steam-engines, arrangement of means for operating.	Henry E. Canfield.....	New York, N. Y.	April 15.
15400	Valves, steam-slide, relieving from pressure...	Henry R. Worthington.....	New York, N. Y.	July 22.
14749	Valves of direct-acting engines by the exhaust steam, completing the throw of the.	Henry R. Worthington.....	Brooklyn, N. Y.	April 22.
14338	Valves of steam-engines, operating the, arrangement of means for.	Jacob Scheitlin, assignor to J. Scheitlin and O. A. Dailey.	Washington, D. C.....	Feb. 26.
14419	Valves of steam-engines, slide, means for reducing the friction of.	Robert L. Stevens.....	Hoboken, N. J.	Mar. 11.
	Valves of steam-hydrants, arrangement of means for operating the (See Class XI, Letter H.)			

15025	Valves, operating, of steam-engines.....	Olds Tufts.....	Boston, Mass.....	June 3.
14606	Valves, piston, for steam-boiler regulators.....	William S. Gale.....	New York, N. Y.....	April 8.
15834	Valves, regulating, for steam-engines.....	Henry F. Shaw, assignor to H. F. and O. F. Shaw.....	Woburn, Mass.....	Sept. 30.
15120	Valves, safety.....	R. Cornelius.....	Philadelphia, Pa.....	June 17.
14663	Valves, safety, for steam-engines.....	A. B. Latta.....	Cincinnati, Ohio.....	May 27.
14611	Valves, slide, and means for operating them, arrangement of.....	Wm. M. Henderson.....	Baltimore, Md.....	April 8.
14991	Valves, slide, for steam-engines, operating.....	John F. Allen, assignor to N. L. Cole.....	New York, N. Y.....	May 27.
14010	Valves, slide, method of operating and lubricating.....	James Cochrane.....	New York, N. Y.....	Jan. 1.
14991	Valves, slide, relieving, from the pressure of steam.....	William Burdon.....	Brooklyn, N. Y.....	June 3.
14125	Valves, steam, as cut-offs, means of regulating and working.....	Chas. H. Brown and Chas. Burleigh, assignors to "The Putnam Machine Co".....	Fitchburg, Mass.....	Jan. 15.
14145	Valves, steam, in blower-engines, means for operating the.....	James P. Ross.....	Lewisburg, Pa.....	Jan. 22.
14109	Valves, stop, steam.....	James McNab and Adam Carr.....	New York, N. Y.....	Jan. 15.
14906	Valves, supplemental, arrangement of, for high pressure steam-engines.....	Richard Colburn and L. W. Hanson.....	Norwich, Conn.....	May 20.
14150	Valve, throttle, of steam-engines, means for operating the.....	Albert Bisbee.....	Chelsea, Mass.....	Jan. 29.

CLASS VII.—NAVIGATION AND MARITIME IMPLEMENTS, comprising all vessels for conveyance on water, their construction, rigging, and propulsion, diving-dresses, life-preservers, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14903	Boat-framer.....	James Beetle.....	New Bedford, Mass.....	1886.
14565	Boat, life.....	George W. La Baw.....	Jersey City, N. J.....	May 20.
15794	Boat oars.....	Rufus Rode, assignor to.....	Manchester Township.....	April 1.
14489	Boats, detaching, from their tackle.....	John Derrig.....	York, Pa.....	Sept. 23.
15187	Boats, ice, arrangement of means attached to.....	Chas. H. Key, admin'r of S. F. Blunt, dec'd.....	Baltimore, Md.....	Mar. 25.
15472	Boats, ice-breaking.....	Daniel Large.....	Philadelphia, Pa.....	June 24.
		Henry and William Brown.....	Philadelphia, Pa.....	Aug. 5.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14843	Boats, life, propellers for.....	George W. La Baw, assignor to G. W. La Baw, Jos. Colton, and Theo. Howell.	Jersey City, N. J.....	1856. May 6.
15487	Boats, line-ferry, or flying-bridges, means for guiding.	William A. Jordan	Thibodeaux, La.....	Aug. 5.
15473	Boats, means for attaching and detaching, to and from their tackle.	John M. Brooke.....	U. S. N.....	Aug. 5.
15954	Boats, steam, capstans for.....	John Schaffer.....	Manchester, Pa.....	Oct. 21.
15845	Buoys	William M. Ellis	Washington, D. C.....	Oct. 7.
15200	Buoy, tidal alarm	John Taggart	Roxbury, Mass.....	June 24.
14758	Chain-cable hooks.....	Enoch Applegate	Wilmington, Del.....	April 29.
15323	Fog-bell, electro-magnetic.....	Arthur Barbarin and B. F. Slims.....	New Orleans, La.....	July 15; England, August 17, 1855.
15605	Fog-bell, self-adjusting.....	Henry L. De Zeng.....	Geneva, N. Y.....	Aug. 26.
15586	Grapple for raising sunken bodies	Greenleaf A. Wilbur	Skowhegan, Me.	Aug. 19.
14497	Paddle-wheels.....	Calvin Fletcher	Cincinnati, Ohio	Mar. 25.
15564	Paddle-wheels	Abraham Houseworth.....	New York, N. Y.....	Aug. 19.
15967	Paddle-wheels, buckets of, arrangement of.....	Matthew A. Crooker.....	New York, N. Y.....	Oct. 28.
14920	Paddle-wheels, feathering	Harvey Lull.....	Hoboken, N. J.....	May 20.
15149	Paddle-wheels, feathering	Joseph G. Shanda	St. Louis, Mo.....	June 17.
16091	Propeller-shafts.....	A. Jouan	San Francisco, Cal.....	Nov. 18.
14598	Propeller-shafts in keels, inclosing.....	Aaron Arnold.....	Troy, N. Y.....	April 8.
14973	Propellers, hand	John Gerard Ross.....	New York, N. Y.....	May 27.
14786	Propelling boats.....	S. W. Wood	Washington, D. C.....	April 29.
16169	Sail-hanks	H. M. Bonney.....	New Bedford, Mass.....	Dec. 9.
14694	Sails, reefing.....	H. D. P. Cunningham, R. N.....	Bray, Hants, England.....	Jan. 15; England, November 30, 1850.
15754	Sails, top, reefing.....	Isaac Boas	Brooklyn, N. Y.....	Sept. 23.
14723	Sail, top, yards, suspending extra.....	George Hubbard	Stonington, Conn.....	April 22.
15837	Ships and boats' tackle, ringbolt for.....	H. Bigelow and M. Camp.....	New Haven Conn.....	Oct. 7.

15024	Ship, and other vessels bilge and leakage water indicator for.	Reuben Shaler	Madison, Conn.....	Aug. 26.
14113	Ships and other vessels, cargo-ports or.....	Charles Perley.....	New York, N. Y.....	Jan. 16.
14048	Ships and other vessels, constructing the bottoms of.	Samuel W. Brown.....	Lowell, Mass.....	Jan. 8.
14365	Ships and other vessels, means for increasing the buoyancy of	Alex. Le Mat.....	New Orleans, La.....	Mar. 4.
15091	Ships and other vessels, safes for.....	William Montgomery Storm	New York, N. Y.....	June 10.
15886	Ships' blocks, anti-friction bushing for	James Kelly.....	Sag Harbor, N. J.....	Oct. 14.
15817	Ships' blocks, sheave-pin of, means for lubricating the.	John M. Riley	Newark, N. J.....	Sept. 30.
14377	Ships' cabins, chairs for. (See Class XVII, letter C.)	D. & G. Talcott	Oswego, N. Y.....	Mar. 4.
14983	Ships' capstans	Samuel Gaty	St. Louis, Mo.....	May 27.
14986	Ships' capstans	Daniel and George Talcott	Oswego, N. Y.....	May 27.
15933	Ships' capstans	Charles Perley.....	New York, N. Y.....	Oct. 21.
15123	Ships' capstans and windlasses.....	James Emerson	Worcester, Mass.....	June 17.
16059	Ships' compasses. (See Class VIII, letter C.)			
15395	Ships' compasses, self-registering. (See Class VIII, letter C.)			
16059	Ships, &c, method of ventilating.....	Rudolph Knecht.....	New York, N. Y.....	Nov. 11.
15395	Ships' hooks, machines for bending. (See Class II, letter H.)	J. Stever.....	Bristol, Conn.....	July 22.
15704	Ships' pendulum pumps for, arrangement of means in.	Christopher N. Nixon	Ramsgate, England.....	Sept. 9; England, May 12, 1854.
15732	Ships' rudders, hanging.....	Joseph S. Foster.....	Salem, Mass.....	Sept. 16.
16045	Ships' sails, reefing, upon extra yards.....	Thomas Cart.....	Liverpool, England.....	Nov. 11.
16165	Ships, steering apparatus for.....	David W. Smith.....	Boston, Mass.....	Dec. 2.
16238	Ships, steering apparatus for.....	Peter H. Jackson.....	New York, N. Y.....	Dec. 16.
16000	Ships' windlass.....	Christopher Amazeen.....	New Castle, N. H.....	Nov. 4.
15085	Ships' windlasses, the pawl cases of a, machinery for operating.	Rufus Porter.....	Washington, D. C.....	June 10.
15510	Signals, fog, mode of sounding whistles for	John W. Drummond	Norwalk, Conn.....	Aug. 12.
14104	Steering apparatus.....	Wm. R. Lavender and Atkins Smith	Provincetown, Mass.....	Jan. 15.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15251	Velocimeters for vessels. (See Class VII, word <i>Vessels</i> .) Watches, independent seconds, movement for.	George F. Reed.....	Waltham, Mass.....	1856. July 1.

CLASS IX.—CIVIL ENGINEERING AND ARCHITECTURE, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15257	Blasting-powder	William Silver, Jr.....	Wapwallopen, Pa.....	1856. July 1.
16053	Blinds, flat-spring bulkerl or	William L. Gallaudet	New York, N. Y.....	Nov. 11.
15587	Boring artesian wells, apparatus for.	Clarendon Williams	Franklin, Mo.....	Aug. 19.
14314	Bridge, arched trussed	Horace L. Hervey.....	Quincy, Ill.....	Feb. 26.
15873	Bridge, canal.....	F. G. Anderson	Chillicothe, Ohio.....	Oct. 14.
14929	Bridge, draw, floating.....	Napoleon B. Proctor.....	Burlington, Vt.....	May 30.
14534	Bridges.....	George W. O. Huygens, assignor to himself, Charles Bender, and D. F. Tiedeman.	St. Louis, Mo.....	April 1.
15823	Bridges.....	I. Rogers.....	Cincinnati, Ohio.....	Sept. 30.
14313	Bridges, girders for.....	P. C. Guion	Cincinnati, Ohio.....	Feb. 26.
15048	Bridges, lattice	Lucius E. Truesdell	Warren, Mass	June 3.
14206	Buildings, cast iron, mode of constructing	Harriet V. Terry, administratrix of Wm. D. Terry, deceased.	Boston, Mass.....	Feb. 5.
15002	Buildings, device in walls of, for preventing damage to goods by water in case of fire.	Thomas Estlack.....	Philadelphia, Pa.....	June 3

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14351	Gate, farm	Charles N. Cole.....	Pleasant Valley, N. Y.....	1856. May 13.
15213	Gate, farm	George Taylor, assignor to H. Ogborn and George W. Stigleman.	Richmond, Ind.....	June 24.
16243	Gate, railroad, for cattle guard.....	Joseph T. McIntyre.....	New Castle, Del.....	Dec. 16.
14426	Gates, doors, &c., method of hanging	Samuel Oberholzer	Terro Hill, Pa.....	May 6.
14689	Gates, farm, method of hanging and elevating or depressing.	J. Francis Downing.....	Erie, Pa.....	April 15.
14131	Gates, farm, method of opening and closing ..	J. A. Ayres.....	Hartford, Conn.....	Jan. 22.
15331	Gates, farm, method of opening and closing....	Dennis E. Feun.....	Tallmadge, Ohio.....	Oct. 14.
15631	Gates, farm, method of operating.....	Caleb Winegar.....	Union Springs, N. Y.....	Aug. 26.
15518	Gates, farm, method of raising, lowering, and operating.	C. Hunter and N. Isham	Norwalk, Ohio.....	Aug. 12.
14351	Gates, farm, self-acting	Elon Dunbar.....	Philadelphia, Pa.....	Mar. 4.
15911	Gates, fastening for.....	Smith Young.....	Milton, N. Y.....	Oct. 14.
14387	Gates, lock, valves for.....	William Butler.....	Little Falls, N. Y.....	Mar. 11.
14456	Grating, illuminating	Joshua K. Ingalls.....	Williamsburg, N. Y.....	Mar. 18.
14355	Houses, portable.....	Daniel Fitzgerald.....	New York, N. Y.....	Mar. 4.
14952	Houses, portable, mode of constructing.....	Daniel Fitzgerald.....	New York, N. Y.....	May 27.
15201	Houses, ware, safety hatches for.....	Wm. H. Thompson and Eustis P. Morgan.	Biddeford, Me.....	June 24.
14854	Lathing surface, continuous sheet-metal.....	John B. Cornell.....	New York, N. Y.....	May 13.
14092	Lock gate valves.....	De Witt C. Cummings.....	Fulton, N. Y.....	Jan. 15.
	Mouldings, curved, method of cutting. (See Class XIV, letter M)			
15776	Pavement, cast iron	George M. Ramsay	New York, N. Y.....	Sept. 23.
14394	Pavement, cast-iron, mode of constructing....	Pelotiah M. Hutton.....	Troy, N. Y.....	Mar. 4.
15479	Pavement, metal.....	Solomon B. Ellichoirp	New York, N. Y.....	Aug. 5.
14736	Pavements, cast-iron	Asa P. Robinson	New York, N. Y.....	April 22.
14054	Paving, street, machines	Thomas Davidson, jr.....	Kensington, Pa.....	Jan. 8.
14716	Peat, digging, machine for.....	Abraham Fitta.....	Worcester, Mass.....	April 22.
14502	Pile driver	J. W. Hoard	Providence, R. I.....	Mar. 25.
15090	Platform supporters.....	Charles E. Flagg.....	Shelburne, Mass.....	June 10.

14520	Post driver.....	Junius M. Sampson.....	Wayneville, Ill.....	Mar.	25.
14568	Railroad bars, lock joint for.....	James R. Hilliard.....	Pateron, N. J.....	May	13.
	Railroad bars, repairing. (See Class II, letter B.)				
	Railroad bars, repairing. (See Class II, letter B.)				
	Railroad platform scales. (See Class XII, letter S.)				
14870	Railroads, compound rail for.....	William J. Holman.....	Indianapolis, Ind.....	May	13.
14886	Railroads, snow plough for.....	Samuel Richards.....	Philadelphia, Pa.....	May	13.
	Railway bars, rolling. (See Class II, under "Rolling.")				
	Roofing, cements. (See Class IV, Letter C.)				
14267	Roofing, mastic, construction of.....	C. C. Hoff, assignor to E. P. Russell.....	Albany, N. Y.....	Feb.	12.
15988	Roofs, sheet-metal, coverings for, mode of securing.	William H. Trisler and John Stewart.....	Fairview, Pa.....	Oct.	23.
15476	Sash supporter.....	Charles H. Dana.....	West Lebanon, N. H.....	Aug.	5.
15557	Sash supporter.....	Charles S. Bruff.....	Baltimore, Md.....	Aug.	19.
15390	Scaffold for shingling roofs.....	J. W. Rodefer.....	Abingdon, Va.....	July	22.
14764	Scaffolding.....	John M. Dearborn.....	Boston, Mass.....	April	29.
14156	Scaffolds.....	Charles Foster.....	Philadelphia, Pa.....	Jan.	29.
14809	Scraper, road.....	John Gustine and J. M. Rankin.....	Lewistown, Ill.....	May	6.
14817	Scrapers, dumping.....	Mathew S. Kahle.....	Lexington, Va.....	May	6.
14050	Scuttle, coal, covers.....	Ira Chase, jr.....	Boston, Mass.....	Jan.	8.
14185	Shingles, cast-iron, lugs for.....	John Cook.....	Westmoreland, N. Y.....	Feb.	5.
14798	Shutters, double panel.....	Charles S. Bruff.....	Baltimore, Md.....	May	6.
14021	Smoke houses.....	Moses W. S. Kendall.....	Cincinnati, Ohio.....	Jan.	1.
15647	Street sprinkler.....	John F. Driggs.....	New York, N. Y.....	Sept.	2.
14341	Streets, sweeping, machine for.....	Timothy Alden.....	New York, N. Y.....	Mar.	4.
14512	Streets, sweeping, machine for.....	Joseph Miller.....	Boston, Mass.....	Mar.	25.
15253	Streets, sweeping, machine for.....	D. H. Rickards.....	Georgetown, Mass.....	July	1.
15710	Streets, sweeping, machine for.....	Robert A. Smith.....	Brooklyn, N. Y.....	Sept.	9.
14651	Stump extractor.....	J. B. Creighton.....	Tiffin, Ohio.....	April	15.
14530	Stumps, extracting, machine for.....	Solomon W. Ruggles.....	Fitchburg, Mass.....	May	6.
14937	Stumps, extracting, mode of.....	Geo. W. Zeigler and Manasseh Grover.....	Clyde, Ohio.....	May	20.
15537	Stumps, extracting, mode of.....	W. O. Thompson and L. Harrington.....	Orange, Mass.....	Aug.	12.
15566	Sweeping gutters, machine for.....	William H. King, assignor to Wm. H. King and Isaac Hyneman.....	Philadelphia, Pa.....	Aug.	19.
14264	Switch, railroad.....	James Whitcomb.....	Detroit, Mich.....	Feb.	12.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Tile, drain, machine. (See Class XV, Letter F.)			1856.
14180	Trap, bell, stench.....	Charles H. Bush	Fall River, Mass.....	Feb. 5.
14755	Tunnelling and quarrying machine or.....	Ira Merrill, assignor to Ira Merrill and Arthur Maxwell.	Shelburne Falls, Mass.....	April 22.
14483	Tunnelling rocks, machine for	Charles Wilson	Springfield, Mass.....	Mar. 18.
14281	Vault covers	John B. Cornell	New York, N. Y.....	Feb. 19.
14680	Vault covers	William D. Titus.....	Brooklyn, N. Y.....	April 15.
16161	Vault covers	Thomas Floyd, assignor to Thos. Floyd and Geo. H. Merklin.	Chambersburg, Pa.....	Dec. 2.
15474	Water closets	William S. Carr.....	New York, N. Y.....	Aug. 5.
15758	Window blinds, the slats of, mode of adjusting	B. E. English.....	Hartford, Conn.....	Sept. 23.
15000	Window frames	John Casey.....	New York, N. Y.....	June 3.
15578	Window sash	Francis E. Sessions.....	Worcester, Mass.....	Aug. 19.
14744	Windows, &c., weather-strip and lock for.....	Alfred Speer.....	Pasanic, N. J.....	April 22.
15447	Window sash, hanging, mode of.....	Cromwell P. Weaver	Philadelphia, Pa.....	July 29.
15528	Window sashes, spring pulleys for.....	John Shopland	Honesdale, Pa.....	Aug. 12.

CLASS X.—LAND CONVEYANCE, comprising carriages, cars, and other vehicles used on roads, and parts thereof.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
				1856.
14345	Axle-arms, skeln for.....	John M. Burke	Danville, N. Y.....	Mar. 4.
16153	Axle-box	William H. Saunders.....	Hastings, N. Y.....	Dec. 2.
14579	Axle-boxes for carriages.....	Ezra M. Stratton.....	New York, N. Y.....	April 1
16089	Axle, car, and other journals, lubricating.....	P. E. Prout	Orleans, France	Nov. 18; France, April 15, 1853.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16233	Faucet, filtering.....	George H. Fox, and	Boston, Mass.....	Dec. 16, 1856.
14734	Faucet, measuring.....	Henry J. Siller.....	East Cambridge, Mass.....	
15263	Faucets, filter attachment for.....	Edwin A. Palmer.....	Paris, N. Y.....	April 22.
15430	Faucets, method of inserting, into fluids under pressure.....	James H. Wright.....	New York, N. Y.....	July 1.
		Patrick Mihan.....	Boston, Mass.....	July 29.
15027	Filter.....	Chapman Warner.....	Green Point, N. Y.....	June 3.
15646	Filter.....	David N. B. Coffin, jr.....	Newton, Mass.....	Sept. 2.
15363	Filtering medium.....	William Wickersham.....	Boston, Mass.....	July 15.
14692	Fluid-metre, diaphragm.....	R. L. Hawes.....	Worcester, Mass.....	April 15.
16284	Fluid-meters, device for operating by hand.....	William Mason.....	Warren, Mass.....	Dec. 23.
14982	Fluids, method of drawing from bottles.....	J. W. Fox.....	Durhamville, N. Y.....	May 27.
15553	Fluids, measuring, method of, while drawing.....	Samuel Krauser.....	Reading, Pa.....	Oct. 7.
15177	Fluids, method of cooling and drawing from casks, &c.....	F. Espenschiede.....	Williamsport, Pa.....	June 24.
15385	Fluids under pressure, method of tapping.....	James P. S. Otterson.....	Nashua, N. H.....	July 22.
15716	Gases, waste, steam, &c., method of drawing from manufacturing enclosures.....	Robert F. Brower, assignor to S. A. and J. L. Brower.....	Bloomfield, N. J.....	Sept. 9.
15256	Gates, balance, for flumes in water-power.....	Daniel Robinson.....	Knoxville, Pa.....	July 1.
14692	Gates, sluic.....	George W. Flinders.....	Lynn, Mass.....	April 8.
15846	Hose coupling.....	L. M. Ferry, assignor to James T. Ames.....	Chicopee, Mass.....	Oct. 7.
14090	Hydrant.....	C. J. Cowperthwaite.....	Philadelphia, Pa.....	Jan. 15.
14557	Hydrant.....	Henry English.....	Baltimore, Md.....	April 1.
14805	Hydrant.....	C. J. Cowperthwaite.....	Philadelphia, Pa.....	May 6.
14962	Hydrants, steam, arrangement of means for operating the valves of.....	Charles K. Landis.....	Philadelphia, Pa.....	May 27.
14592	Hydrants, waste, attachment for.....	Edward J. Baker.....	Baltimore, Md.....	April 8.
14712	Hydrants, waste, device for.....	John Culver.....	Baltimore, Md.....	April 22.
16931	Hydrants, waste, valves for.....	Robert Lawson.....	St. Louis, Mo.....	Nov. 11.
14836	Hydraulic metre.....	John S. Barden, assignor to himself and Aaron W. Rockwood.....	New Haven, Conn.....	Feb. 26.

		George Trott, R. H. Coles, and Wm. A. Clark.	St. Louis, Mo.	Sept. 9.
15712	Hydraulic puppet-valves, mode of suspending.			
16040	Metre, diaphragm, fluid	J. H. Darlington and W. Piper	New York, N. Y.	Nov. 11.
14029	Pump	James Neal and Charles W. Emery	Boston, Mass.	Jan. 1.
14024	Pump	Charles N. Lewis	Seneca Falls, N. Y.	Jan. 1.
15278	Pump	W. T. and J. Barnes	Buffalo, N. Y.	Oct. 14.
14834	Pump, cattle	Thomas H. Powers	Wyocena, Wis.	May 13.
14576	Pump, feeding, method of varying the stroke of, for steam-engines.	John R. Sees	New York, N. Y.	April 1.
14039	Pump for diving bells, hydro-pneumatic.	George Williamson	Brooklyn, N. Y.	Jan. 1.
15173	Pumping, condensing steam-engines which are used for. (See Class VI, letter E.)			
14186	Pump, rotary	Stephen D. Carpenter	Madison, Wis.	June 24.
15888	Pumps	Edward N. Dickerson and Ellsha K. Root	Hartford, Conn.	Feb. 5.
15922	Pumps	Edwin T. Ligon	Richmond, Va.	Oct. 14.
16229	Pumps	John P. Cowing	Seneca Falls, N. Y.	Oct. 21.
14372	Pumps, air escapes for,	Jabez Coney	Boston, Mass.	Dec. 16.
16024	Pumps, chain	Hiram Smith	Norwalk, Ohio	Mar. 4.
15070	Pumps, double-acting steam, method of effecting uniform pressure upon the pumping piston of.	John Robinson	New Brighton, Pa.	Nov. 4.
15134	Pumps, double-acting, valve for	R. B. Gorsuch	New York, N. Y.	June 10.
14626	Pumps, method of operating by wind wheels	John C. King	Belvidere, N. J.	June 17.
14599	Pumps, rotary	Jacob W. Goodwin, and Moses C. Hawkins.	Edenborough, Pa.	April 8.
15059	Pumps, rotary	Thomas Crane	Fort Atkinson, Wis.	April 8.
15221	Pumps, rotary	John Broughton	Chicago, Ill.	June 10.
15274	Pumps, rotary	Charles N. Clow	Port Byron, N. Y.	July 1.
15280	Pumps, rotary	James A. Bazin	Canton, Mass.	July 8.
15211	Pumps, steam, method of operating steam valves of.	Charles N. Clow	Port Byron, N. Y.	July 8.
15227	Pumps, steam, method of operating valves of.	Remy Henry, assignor to James Smith	Melrose, N. Y.	June 24.
16154	Siphon à clapet.	Robert H. Fletcher	Brooklyn, N. Y.	July 1.
16178	Siphon rams, arrangement of valves, &c, in	Henry M. Walker	Watertown, Conn.	Dec. 2.
14623	Springs, surface, method of treating	Erastus W. Ellsworth	East Windsor Hill, Conn.	Dec. 9.
14617	Valve, automatic thermo-hydro-olao-pneumatic.	Anson Wolcott	East Bloomfield, N. Y.	April 8.
15030	Valve, conical, method of attaching stem to a	Earl Parker and William Reynolds	East Hartford, Conn.	April 8.
		Henry R. Worthington	Brooklyn, N. Y.	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15192	Valve, elastic, tubular.....	Franklin Peale.....	Philadelphia, Pa.....	1856.
15960	Valve, puppet.....	R. P. Bradley.....	Cuyahoga Falls, Ohio.....	June 24.
14627	Valves, arrangement of, for hydraulic-engines.	John D. Heaton.....	Dixon, Ill.....	Oct. 28.
14646	Water, mechanism by which cattle raise, for themselves.	J. A. Ayres.....	Hartford, Conn.....	April 8.
14525	Water-meter.....	A. J. Sweeney.....	Wheeling, Va.....	April 15.
14921	Water-meter.....	Nathan B. Marsh.....	Cincinnati, Ohio.....	Mar. 25.
15597	Water, method of applying one stream of, to assist in raising another.	Charles J. P. Ariail.....	Roxbury, Conn.....	May 20.
16235	Water-mill, portable.....	John Heller.....	East Lampeter, Pa.....	Aug. 26.
14535	Water-wheel.....	John Haseltine.....	Goffstown, N. H.....	Dec. 9.
15175	Water-wheel.....	Wilbur M. Davis.....	Carmel, Me.....	Mar. 25.
15309	Water-wheel.....	John Tyler.....	West Lebanon, N. H.....	June 24.
19977	Water-wheel.....	G. E. W. Herbert.....	Cohocton, N. Y.....	July 8.
14882	Water-wheel, reacting.....	George W. Pittock, John B. Stott, and Galen Richmond.	Troy, N. Y.....	Oct. 28.
15381	Water-wheel, reacting.....	A. Monroe.....	Worcester, Mass.....	May 13.
15463	Water-wheels, gates for, method of operating.	John C. Shorey, assignor to himself and A. J. Webster.	Rochester, N. H.....	July 22.
16027	Water-wheels, method of starting and stopping	David M. Tyler.....	Lisle, N. Y.....	July 29.
15273	Wells, water from, method of drawing.....	H. B. Barber.....	Scott, N. Y.....	Nov. 4.
15970	Wheel, current.....	Plumer Chesley.....	Candia, N. H.....	July 8.
16110	Wheel, Fourneyron turbine.....	Stephen K. Baldwin.....	Gilford, N. H.....	Oct. 28.
14793	Wheels, turbine, guides or chutes for, construction of.	Joseph Bastien.....	Theresa, N. Y.....	Nov. 25.
14015	Wind-mill.....	Benjamin Fenn.....	Hartford, Ohio.....	May 6.
15714	Wind-mill.....	Ephraim Whitman.....	Abington, Mass.....	Jan. 1.
15709	Wind-mill.....	John R. St. John.....	Lockport, N. Y.....	Sept. 9.
15805	Wind-mill.....	Marcus Frisbee.....	Rensselaerville, N. Y.....	Sept. 9.
16257	Wind-mills.....	Solomon W. Ruggles, assignor to Silas Ruggles.	Fitchburg, Mass.....	Sept. 30.
				Dec. 16.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Lubricating slide-valves, method of operating and. (See Class VI, letter V.)			1856.
	Lubricating spindle-steps. (See Class IV.)			
	Lubricating throstle-spindles (See Class IV.)			
	Lubricator. (See Class IV.)			
	Lubricator. (See Class IV.)			
	Lubricator. (See Class IV.)			
	Lubricator. (See Class IV.)			
14261	Oil-box for axles with conical journals.	William D. Titus	Brooklyn, N. Y.	Feb. 12.
15145	Packer, flour, clutch for.	John T. Noye	Buffalo, N. Y.	June 17.
14005	Presses, cheese	William C. Pancost	Geneva, Ohio	Jan. 8.
14094	Presses, cotton	Carb S. Hunt	Bridgewater, Mass.	Jan. 15.
15936	Presses, cotton	Wm. F. and Chas. J. Provoat.	Selma, Ala.	Oct. 21.
14493	Presses for punching	Geo. H. Corlie and Eliza Harris.	Providence, R. I.	Mar. 25.
14031	Presses, hay and cotton.	Joseph Peavy	Passadunk, Mo.	Jan. 1.
14663	Presses, hay and cotton.	Simon Ingersoll	Green Point, N. Y.	April 15.
14069	Presses, power, chain for.	Nathan Chapman	Myatie river, Conn.	Jan. 1.
14733	Scale, grain, electro magnetic.	Nathan M. Phillips	New York, N. Y.	April 22.
14119	Scales, platform	Francis M. Strong and Thomas Rosa	Vergennes, Vt.	Jan. 15.
16256	Scales, R. R. platform, arrangement of	Lea Tacey	Downingtown, Pa.	Dec. 23.
14194	Scales, weighing	S. S. Mills and M. Bisell	Charleston, S. C.	Feb. 5.
14361	Scales, weighing	James Kelly	Sag Harbor, N. Y.	Mar. 4
14702	Scales, weighing	R. F. Wolcott	Claremont, N. H.	April 15.
16302	Scale, weighing	E. Sampson, assignor to the "Vergennes Scale Manufacturing Co"	Vergennes, Vt.	Dec. 23.
14392	Scale, weighing, beams.	William Yost	Goshen, Ohio.	Mar. 4.
14159	Shafts, &c., universal joint for connecting	Jonas Hinkley	Huron, Ohio.	Jan. 29.
14210	Shafts, wrought iron, making	Olis Tulta	Boston, Mass.	Feb. 5.
14330	Weighting cart	James W. Martin, assignor to himself and Lewis Rotherwell.	Burlington, N. J.	May 20.
14687	Weighting machines, grain.	W. H. Bramble	Cincinnati, Ohio	April 15; antedtd. April 8.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14199	Boils, flour	S. C. Mendenhall	Richmond, Ind	1856.
15455	Boils, flour	S. C. Mendenhall and J. Conner	Richmond, Ind	Feb. 5.
15697	Gear, reversing	George Juengst	New York, N. Y.	July 29.
15630	Grain cleaner and separator	Richard Ward	Edinburg, Ind	Sept. 9.
16088	Grain, cleaning, machines for	Chas. B. Horton	Elmira, N. Y.	Aug. 26.
15785	Grain separators	H. E. Smith	Philadelphia, Pa.	Nov. 18.
15879	Grain separators	Joel W. Cormack and F. C. Walker	Quincy, Ill	Sept. 23.
16103	Grain separators and conveyors	J. Lyndall, assignor to C. Roberts	Belleville, Ill	Oct. 14.
15180	Grindstones, hanging	David Hman	Berea, Ohio	Nov. 18.
14547	Horse-power	Richard Hunt	Freeport, Ind	June 24.
	Horse-power, method of applying to fire-engines. (See Class V, letter F.)			Mar. 25.
15296	Horse-power, reversible	Philip H. Kells	Hudson, N. Y.	July 8.
14750	Horse-power, link-gearing for	Thomas D. Burk, assignor to J. C. Miller and C. A. Fowler	Chicago, Ill	April 22.
15693	Horse-power, links of	A. W. Gray	Middletown, Vt.	Sept. 9.
16040	Mill, cider	Benjamin Mackerley	New Petersburg, Ohio	Nov. 4.
16261	Mill, cider	Harry Abbott	Huron, N. Y.	Dec. 23.
15255	Mill, corn and cob	Cyrus Roberts	Belleville, Ill	July 1.
15060	Mill, flour, cutting	Jonathan Burdge	Cincinnati, Ohio	June 10.
16219	Mill-grinding	Thomas B. Stout	Keyport, N. J.	Dec. 16.
15680	Mill, metallic hemispherical, grinding dress of	A. Atwood	Troy, N. Y.	Sept. 9.
14227	Mills, &c, feed-gates for, method of regulating	Clement Dare	Cincinnati, Ohio	Feb. 12.
15488	Mills, corn and cob	Jacob O. Joyce	Cincinnati, Ohio	August 5, 1856; ante-dated Feb. 5, 1856.
14132	Mills, flouring	Thomas Crane	Fort Atkinson, Wis	Jan. 22.
14179	Mills, flouring	Joseph Weiss	Bordentown, N. J.	Jan. 29.
14164	Mills, grinding	Lucius Page	Cavendish, Vt.	Jan. 29.
15841	Mills, snut	Joel W. Cormack	Quincy, Ill	Oct. 7.
15868	Mill stone dress	W. P. Coleman	New Orleans, La.	Oct. 7.
16074	Mill stone dress	Thomas B. Stout	Keyport, N. J.	Nov. 11.
15346	Mill-stones, adjustment of	J. G. Siemens	St. Louis, Mo.	July 15.

14134	Mortising tool.....	A. O. Hitchcock and C. H. Amidon.....	Greenfield, Mass.....	Mar. 18.
14135	Mouldings, curved, method of cutting.....	John J. Westerfield.....	New Brunswick, N. J.....	Dec. 9.
14136	Planer.....	Andrew Blackie and Walter Clark.....	St. Clair, Mich.....	Feb. 26.
14137	Plane, bench.....	Lewis C. Ashley.....	Troy, N. Y.....	Mar. 18.
14138	Plane bits, method of securing.....	Thomas D. Worrall.....	Boston, Mass.....	May 27.
14139	Planer, rotary, for felloes.....	C. H. Demmon.....	Green Rivers, Vt.....	Feb. 12.
14140	Planes, bench.....	Ebenezer Mathers.....	Morgantown, Va.....	Mar. 4.
14141	Planes, carpenter's, method of adjusting the bits of.....	Thomas D. Worrall.....	Lowell, Mass.....	Dec. 23.
14423	Plane stick.....	John B. Thomas.....	Cincinnati, Ohio.....	Mar. 11.
14613	Planing, branch, wheel.....	Edwin Jones.....	Greenfield, Mass.....	Dec. 2.
14604	Planing felloes, machine for.....	A. W. Fox.....	Athens, Penn.....	April 8.
14455	Planing knives, rotary, arrangement of.....	Dan'l N. Hurlbert.....	Utica, N. Y.....	Mar. 18.
14480	Planing machine.....	C. B. Morae.....	Rhinbeck, N. Y.....	May 13.
15403	Planing machine.....	Asahel Lockwood, assignor to L. B. Flinders.....	Chicago, Ill.....	July 22.
16185	Planing machine.....	Hudson Osgood.....	Waterville, Maine.....	Dec. 9.
14038	Planing machines, arrangement of feed-rollers for.....	H. C. Wight.....	Worcester, Mass.....	Jan. 1.
15129	Planing machines, certain devices in.....	Valentine Houck.....	Buffalo, N. Y.....	June 17.
14263	Planing machines, cutter-heads for.....	Loison D. Towhe.....	Worcester, Mass.....	Feb. 12.
15365	Planing machines, cutter-heads for.....	Lewis M. Berry.....	Boston, Mass.....	July 22.
14272	Planing machines, feed-rollers of, gearing for.....	Chas. Barleigh, assignor to Putnam Machine Company.....	Fitchburg, Mass.....	Feb. 12.
16144	Planing machines, method of clamping cutters in cutter heads for.....	Jonathan P. Grosvenor.....	Boston, Mass.....	Dec. 2.
14130	Plough-handles, &c., machine for bonding.....	Benjamin F. Avery.....	Louisville, Ky.....	Jan. 22.
15382	Polishing machine.....	John Moore.....	Gardiner, Maine.....	July 22.
15800	Rafters, laying out, instrument for.....	LeGrand Crofoot.....	Syracuse, N. Y.....	Aug. 26.
15309	Riving equal pieces from a block, method of.....	Harry White.....	Oneida Castle, N. Y.....	July 22.
15163	Saw for sawing machines, self-setting or self-raking.....	Aza Arnold.....	Washington, D. C.....	June 24.
15718	Saw-gunner.....	L. A. Dole, assignor to Dole, Silver & Felch.....	Salem, Ohio.....	Sept. 9.
15911	Saw-gunners.....	S. J. Lewis and W. Alston.....	Rordentown, N. J.....	Sept. 30.
14863	Saw, hand.....	Jackson Gorham.....	Bairdstown, Ga.....	May 13.
15399	Sawing coopers' hoops, machine for.....	James O. Woodward.....	Taunton, Mass.....	July 22.
15216	Sawing felloes, machine for.....	David Bowen.....	Wadesville, Va.....	July 1.
14339	Sawing machine.....	Wm. P. Wood, assignor to W. P. Wood and Jno. S. Gallaher, jr.....	Washington, D. C.....	Feb. 26.
14757	Sawing machine.....	Thomas J. Alexander.....	Westerville, Ohio.....	April 29.
15026	Sawing machine.....	H. S. Vrooman.....	Logansport, Ind.....	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15780	Hoop-machine	J. & S. Sawyer.....	Fitchburg, Mass.....	1856. Sept. 23.
15865	Hoop-machine	William B. Wood.....	Fitchburg, Mass.....	Oct. 7.
15768	Hoops, notching, machine for.....	Daniel Lamson	East Weymouth, Mass.....	Sept. 23.
16225	Hoops, wooden, method of planing and tapering.....	Clark H. Brown	Forest Port, N. Y.....	Dec. 16.
14871	Knives to cutter-heads, method of securing.....	W. D. Hooker	Dedham, Mass.....	May 13.
15045	Last holders, revolving.....	Josiah Mumford.....	Clarksburg, Ohio.....	June 3.
14647	Lasts, securing and releasing blocks of.....	Andrew J. Barnhart.....	Hartfield, N. Y.....	April 15.
14126	Lath machine.....	John L. Brown, assignor to himself and Charles Learned.....	Indianapolis, Ind.....	Jan. 15.
14499	Lath machine.....	Jesse Gilman.....	Nashua, N. H.....	Mar. 25.
14027	Lath sawing machines, bed for.....	Thomas R. Markillie	Winchester, Ill.....	Jan. 1.
14578	Lathe	Henry C. Spalding	New York, N. Y.....	April 1.
14787	Lathe	Albert H. Brown, assignor to Tingley & Veile.....	Albany, N. Y.....	April 29.
14941	Lathe attachment for turning irregular forms.....	Milton Roberts, assignor to M. Roberts, Isaac Roberts, and Isaac N. Felch.....	Belfast, Me.....	May 20.
16108	Lathe for cutting fluted mouldings	J. Anderson, J. McLaren, and J. Bryant	New York, N. Y.....	Nov. 25.
14632	Lathes, chuck for.....	Michael Neckerman.....	Pittsburg, Pa.....	April 8.
14899	Lathes, cutter-head for.....	Milton Roberts, assignor to Milton Roberts and Isaac N. Felch.....	Belfast, Me.....	May 13.
16192	Lathes for irregular forms	Lemuel Smith	Plymouth, Conn.....	Dec. 9.
16105	Lumber feeding rollers, parallel yielding of, device for governing the.....	Josiah B. Pomroy	Chicago, Ill.....	Nov. 18.
15053	Mitro box.....	William P. Wood, assignor to Samuel D. Vaughan and William P. Wood.....	Washington, D. C.....	June 3.
16020	Mortising chisel to its mandrel, joint for uniting a.....	Joseph R. Perry.....	Port Clinton, Pa.....	Nov. 4.
14071	Mortising machine.....	William Stoddard.....	Lowell, Mass.....	Jan. 8.
14106	Mortising machine.....	J. A. Mariman.....	Hinsdale, Mass.....	Jan. 15.
14364	Mortising machine.....	Edward Joslin.....	Keeno, N. H.....	April 1.
15467	Mortising machine.....	T. R. Bailey.....	Lockport, N. Y.....	Aug. 5.
14100	Mortising tool.....	Hazard Knowles	New York, N. Y.....	Jan. 29.

14454	Mortising tool.....	A. C. Hitchcock and C. H. Amidon	Greenfield, Mass.....	Mar. 18.
16198	Mouldings, curved, method of cutting	John J. Westerfield	New Brunswick, N. J.....	Dec. 9.
14302	Pitman	Andrew Blackie and Walter Clark.....	L. Clair, Mich	Feb. 26.
14436	Plane, bench	Lewis C. Ashley.....	Troy, N. Y.....	Mar. 18.
14979	Plane bits, method of securing.....	Thomas D. Worrall	Boston, Mass.....	May 27.
14228	Planer, rotary, for fellos.....	C. H. Dennison	Green Rivers, Vt.....	Feb. 12.
14363	Planes, bench	Ebenezer Mathers	Morgantown, Va.....	Mar. 4.
16309	Planes, carpenter's, method of adjusting the bits of.....	Thomas D. Worrall	Lowell, Mass.....	Dec. 23.
14423	Plane stock	John B. Thomas	Cincinnati, Ohio.....	Mar. 11.
16163	Planing, bramah, wheel	Edwin Jones.....	Greenfield, Mass	Dec. 2.
14604	Planing fellos, machine for	A. W. Fox.....	Athens, Penn.....	April 8.
14455	Planing knives, rotary, arrangement of	Dan'l N. Hurlbert	Utica, N. Y.....	Mar. 18.
14480	Planing machine.....	C. B. Morse	Rhinebeck, N. Y	May 13.
15403	Planing machine.....	Asahel Lockwood, assignor to L. B. Flinders.....	Chicago, Ill	July 22.
16185	Planing machine.....	Hudson Osgood	Waterville, Maine.....	Dec. 9.
14038	Planing machines, arrangement of feed-rollers for.....	H. C. Wight	Worcester, Mass.....	Jan. 1.
15129	Planing machines, certain devices in.....	Valentine Houck.....	Buffalo, N. Y	June 17.
14263	Planing machines, cutter-heads for	Loison D. Towne	Worcester, Mass	Feb. 12.
15365	Planing machines, cutter-heads for	Lewis M. Berry.....	Boston, Mass.....	July 22.
14272	Planing machines, feed-rollers of, gearing for.....	Chas. Burleigh, assignor to Putnam Machine Company.....	Fitchburg, Mass	Feb. 12.
16144	Planing machines, method of clamping cutters in cutter heads for.....	Jonathan P. Grosvenor	Boston, Mass.....	Dec. 2.
14130	Plough-handles, &c., machine for bending...	Benjamin F. Avery.....	Louisville, Ky.....	Jan. 22.
15382	Polishing machine	John Moore	Gardiner, Maine	July 22.
15600	Rafters, laying out, instrument for	Legrand Crofoot.....	Syracuse, N. Y.....	Aug. 26.
15398	Riving equal pieces from a block, method of.....	Harry White	Oneida Castle, N. Y	July 22.
15163	Saw for sawing machines, self-setting or self-raking.....	Aza Arnold.....	Washington, D. C.....	June 24.
15718	Saw-gunmer.....	L. A. Dole, assignor to Dole, Silver & Felch.....	Salem, Ohio	Sept. 9.
15811	Saw-gummers.....	S. J. Lewis and W. Alston.....	Bordentown, N. J	Sept. 30.
14863	Saw, hand	James O. Woodward.....	Bairdstown, Ga	May 13.
15399	Sawing coopers' hoops, machine for	David Bowen	Taunton, Mass	July 22.
15216	Sawing fellos, machine for.....	Wm. P. Wood, assignor to W. P. Wood and Jno. S. Gallaher, jr.....	Wadesville, Va.....	July 1.
14339	Sawing machine.....	Thomas J. Alexander.....	Washington, D. C.....	Feb. 26.
14757	Sawing machine.....	H. S. Vrooman	Westerville, Ohio	April 29.
15026	Sawing machine.....		Logansport, Ind	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15012	Sawing machine.....	William D. Leavitt.....	Cincinnati, Ohio.....	1856. June 3.
15438	Sawing machine.....	T. T. Prosser.....	Oconomowock, Wis.....	July 29.
15414	Sawing machinery.....	A. S. T. Copeland.....	Pittsburg, Pa.....	July 29.
15790	Sawing machines, device in.....	Wm. P. Wood and Sam'l D. Vaughan.....	Washington, D. C.....	Sept. 23.
15078	Sawing-mills, head blocks of, method of operating.	Joseph Kurtzman.....	Lancaster, Ohio.....	June 10.
15680	Sawing-mills, method of feeding.....	C. and G. S. Dilkes.....	Allowaystown, N. J.....	Sept. 9.
15559	Sawing-mills, method of operating velocity of feed for.	R. Eickemeyer.....	Yonkers, N. Y.....	Aug. 19.
16034	Sawing-mills, self-acting head and tail blocks for.	A. S. Walbridge.....	Burlington, Vt.....	Nov. 4, 1856; Canada, July 20, 1853.
15330	Sawing-mills, self-setting tail block for.....	Joel Dawson.....	Barnesville, Ohio.....	July 15.
14305	Saw-mill.....	Nathan T. Coffin.....	Knightstown, Ind.....	Feb. 26.
14909	Saw-mill blocks, method of operating.....	Bela Gardner.....	Florence, Mass.....	May 20.
14844	Saw-mill dogs.....	Geo. W. Hill, assignor to Francis Lyon and Geo. W. Hill.	Waverly, N. Y.....	May 6.
15893	Saw-mill pitmen, adjustable stirrups for.....	Samuel C. Norcross.....	Dixfield, Me.....	Oct. 14.
14206	Saw-mills.....	John S. Snider.....	Lancaster, Ohio.....	Feb. 5.
14700	Saw-mills, head and tail blocks for.....	E. H. Stearns.....	Cincinnati, Ohio.....	April 15.
14943	Saw-mills, head blocks of, method of operating.	Lucius B. Adams.....	Smithfield, Pa.....	May 27.
15062	Saw-mills, head blocks of, method of operating.	John M. Carlisle.....	Williamston Springs, S. C.....	June 10.
14172	Saw-plates, teeth to, method of attaching.....	P. B. Tyler.....	Springfield, Mass.....	Jan. 29.
15304	Saws, circular and other, method of grinding.	Orrin Rier.....	Cincinnati, Ohio.....	July 8.
14950	Saws, circular, grinding.....	William Cleason.....	East Woburn, Mass.....	May 27.
14957	Saws, circular, guard for.....	Henry Gross.....	Tiffin, Ohio.....	May 27.
15130	Saws, circular, mechanism for adjusting, obliquely to their arbors.	George Hutton.....	New York, N. Y.....	June 17.
14379	Saws, circular, method of adjusting.....	Andrew L. Whitely.....	St. Louis, Mo.....	March 4.
14705	Saws, circular, method of adjusting, for concave or convex work.	James M. Kern, assignor to Isaac Scott and E. P. Fitch.	Morgantown, Va.....	April 15.
14268	Saws, circular, method of concaving.....	James M. Kern, assignor to Enoch P. Fitch and Isaac Scott	Morgantown, Va.....	Feb. 12.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14635	Spoke-shave	Martin Snow	North Bridgewater, Mass.	1856. April 8.
15446	Spools, manufacturing, machine for	A. D. Waymouth	Fitchburg, Mass.	July 23.
15757	Stave jointer	A. H. Crozier	Oswego, N. Y.	Sept. 23.
16195	Stave jointer	B. McKeage	Accotink, Va.	Nov. 18.
15285	Stave joints	J. K. Derby	Jamestown, N. Y.	July 8.
14299	Stave machine	George W. Lavermore, assignor to Livermore Manufacturing Co.	Cambridge, Mass.	Feb. 19.
15429	Stave machine	John McMurtry	Lexington, Ky.	July 29.
15423	Stave machinery, certain improved devices in	Charles Hoyt	West Aurora, Ill.	July 29.
14136	Sticks to polygonal forms, machine for dressing	Joseph W. Kallam	East Wilton, N. H.	Jan. 22.
16041	Tenoning, etc., tool for	Alfred Tippet	Washington, D. C.	Nov. 4.
15572	Tenoning machine	John Potter	Ellicottsville, N. Y.	Aug. 19.
14289	Tenoning window blinds, machine for	John H. Palmer	Elmira, N. Y.	Feb. 19.
14420	Tonguing and grooving tapering boards, method of	B. J. Barber	Ballston Spa, N. Y.	Feb. 12.
14173	Tree-nail machines, device in	Elbridge Webber	Gardiner, Me.	Jan. 29.
	Trees, felling, machine for. (See Class I, letter T.)			
15913	Trees, felling, method of	Simon Ingersoll, assignor to Farmers and Mechanics' Manufacturing Co.	Green Point, N. Y.	Oct. 14.
15178	Trees, felling, method of, by saws	George C. Ehrsam	New York, N. Y.	June 24.
15310	Turning machine	Elbridge Webber	Gardiner, Me.	July 8.
16368	Veneers from the log, machine for cutting	Joseph H. Goodell	Bridgeport, Conn.	Dec. 23.
14337	Wheelwright machines	Chauncey H. Guard, assignor to John A. Scroggs and himself	Brownville, N. Y.	Feb. 26.
14577	Wheelwright machines	John Sutton	Williamston, S. C.	April 1.
15593	Wheelwrights' machine	Abijah D. Stowall, assignor to John A. Place	Fulton, N. Y.	Aug. 19.
15901	Wheelwrights' machine	John Sitton	Williamston, S. C.	Oct. 14.
15679	Wheelwrights' machinery	A. S. Macomber	Bennington, Vt.	June 10.
15944	Wood, bending, method of	Thomas Blanchard	Boston, Mass.	Oct. 21.
15651	Wood, bending, method of	Edwin and Artemus and Cheney Killburn	Burlington, Vt.	Oct. 21.

15441	Wood, carving, certain improved devices in..	Nelson Ruper.....	West Farms, N. Y.....	July 29.
14472	Wood, device on, mode of producing.....	Philip Schwickhardt.....	Brooklyn, N. Y.....	Mar. 11.
14636	Wood, machine for bending.....	Edward J. Updegraff.....	York, Pa.....	April 8.
16157	Wood, method of applying steam to and of cutting scarfs from.	Job White.....	Bellast, Mo.....	Dec. 2.
14405	Wood, method of bending.....	John C. Morris.....	Cincinnati, Ohio.....	Mar. 11.
14607	Wood, splitting, machine for.....	Charles Day and Alanson D. Brown.....	Lancaster, N. Y.....	May 6.

CLASS XV.—STONE AND CLAY MANUFACTURES, including machines for pottery, glass-making, brick-making, dressing and preparing stone, cements, and other building materials.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16174	Brick, hollow, or building blocks, machines for pressing.	M. and J. H. Buck, and F. A. Cushman..	Lebanon, N. H.....	1856. Dec. 9.
15293	Brick-machines.....	James A. Hauser.....	Reading, Pa.....	July 1.
14100	Brick-machines.....	R. W. Jones.....	Greencastle, Ind.....	Jan. 15.
14155	Brick-machines.....	L. T. Delesseze.....	New Orleans, La.....	Jan. 29.
14713	Brick-machines.....	P. S. Devlan.....	Reading, Pa.....	April 22.
14873	Brick-machines.....	Edmund Kingsland.....	New York, N. Y.....	May 13.
14947	Brick-machines.....	Martin Buck, Jas. H. Buck, and Francis A. Cushman.	Lebanon, N. H.....	May 27.
15276	Brick-machines.....	E. Braman and R. Peterson.....	Greencastle, Ind.....	July 8.
15546	Brick-machines.....	Isaac Harman, assignor to Isaac Harman and Wm. Bickel.	Tamaqua, Pa.....	Aug. 12.
15618	Brick-machines.....	H. B. Ramsey.....	Indianapolis, Ind.....	Aug. 26.
15766	Brick-machines.....	William A. Jordan.....	Thibodeaux, La.....	Sept. 23.
15798	Brick-machines.....	Henry Brad.....	Greencastle, Ind.....	Sept. 30.
15808	Brick-machines.....	Joseph A. Hill.....	Greencastle, Ind.....	Sept. 30.
15863	Brick-machines.....	G. J. Washburn and F. H. Bellowa.....	Worcester, Mass.....	Oct. 7.
15905	Brick-machines, rotary.....	George Crangle.....	Philadelphia, Pa.....	June 3.
15471	Brick-press.....	John Bayne.....	East Hartford, Conn.....	Aug. 5.
15778	Brick-press, hydraulic.....	Ethan Rogers.....	Cleveland, Ohio.....	Sept. 23.
14012	Brick-presses.....	John B. Cullen.....	Reading, Pa.....	Jan. 1.
14195	Brick-presses.....	Harvey J. Hughes.....	Davenport, Iowa.....	Feb. 5.
15135	Brick-presses.....	Lewis Kirk.....	Reading, Pa.....	June 17.

Classified List of Patents issued—Continued.

No	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14052	Bricks, building, form of	Edgar Conkling	Cincinnati, Ohio.....	1856.
14846	Bricks, machine, manufacture of	S. W. Wood.....	Washington, D. C.....	Jan. 1.
15329	Brick, unburnt, machine for striking.....	Mareus P. Crapo.....	Buckaport, Cal.....	May 6.
15374	Building blocks from clay, &c., machine for moulding and pressing.....	Ambrose and George M. Foster	New York, N. Y., and Fairhaven, Conn.....	July 15.
15197	Clay, mixing, pug-mill for	Carl F. Schliekoyen	Berlin, Prussia	July 22.
15540	Drill, rock	George H. Wood	Green Bay, Wis.....	June 24, 1856; England, Feb. 24, 1856.
16146	Drilling, rock machine for	Martin and John P. Gore.....	St. Louis, Mo.....	Aug. 12.
15595	Drills, rock	Wm. M. Barton, assignor to Wm. M. and Robert M. Barton	Russellville, Tenn.....	Dec. 2.
15665	Glass, black bottle, manufacture of.....	John F. McCully.....	Gonzales county, Texas	Aug. 19.
15548	Glass fountain lamps, mould for pressing.....	Henry W. Adams	New York, N. Y.....	Sept. 2.
14838	Glass, molten, lading of	Wm. P. Walter and Jacob Green.....	Philadelphia Pa.....	Aug. 19.
16085	Glass, polishing, machines for	Phineas Burgess	New York, N. Y.....	May 6.
14411	Kilns, lime	Job Sands	Sand's Mills, N. Y.....	Nov. 18.
15549	Kilns, lime	Levi Averill.....	Elmira, N. Y.....	Mar. 11.
16023	Marble and stone, machine for sawing.....	George I. Wardwell.....	Hatley, Canada West.....	Aug. 19.
14296	Marble in obelisk form, machines for sawing.....	Philip Schrag and W. J. Von Kammerhuber.....	Washington, D. C.....	Nov. 4.
14532	Marble in obelisk form, machines for sawing.....	John A. Bailey	Detroit, Mich.....	Feb. 19.
14536	Marble in obelisk form, machines for sawing.....	Isaac A. Heald.....	Springfield, Mass.....	Mar. 25.
14659	Marble in obelisk form, machines for sawing.....	L. F. Haviland	Galveston, Texas.....	Mar. 25.
14729	Marble in obelisk form, machines for sawing.....	James Miller.....	Buffalo, N. Y.....	April 15.
14342	Marble in taper form, machines for sawing.....	Christopher Amazeon.....	New Castle, N. H.....	April 22.
14471	Marble in taper form, machines for sawing.....	C. A. Schultz.....	Chicago, Ill.....	Mar. 4.
14277	Marble, machines for sawing	Wallis and George Bull	Tonawanda, Pa.....	Mar. 18.
15792	Marble monuments, sawing tapering.....	Alonza Webster and D. K. Bennett.....	Montpelier, Vt.....	Feb. 19.
14177	Marble, mouldings on, machines for cutting.....	Hiram L. Houghton, assignor to Abel H. Grounell.....	Springfield, Vt.....	Sept. 23.
14072	Marble obelisks, machines for sawing	Abraham Straub	Milton, Pa.....	Jan. 29.
				Jan. 8.

1917

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16150	Baby walker and jumper.....	E. Y. Robbins.....	Cincinnati, Ohio.....	Dec. 2.
15127	Baskets, cake and fruit, silver-plate.....	R. Gleason, jr.....	Dorchester, Mass.....	June 17.
15900	Bed-bottoms, spring.....	Charles Schroeder.....	New York, N. Y.....	Oct. 14.
16310	Bed-bottoms, spring.....	Elkan Adler.....	New York, N. Y.....	Dec. 23.
14374	Beds, straw and husk, instrument for stirring.....	Calvin A. Richardson.....	Waterville, Maine.....	April 1.
15249	Bedstead.....	Ansel Moon.....	Bristol, Wis.....	July 1.
15409	Bedstead.....	Elias Howe, jr.....	Brooklyn, N. Y.....	Aug. 26.
14660	Bedstead fastenings.....	William Hinman.....	Elkhart, Ind.....	April 15.
16423	Bedstead fastenings.....	Spencer Lewis.....	Tiffin City, Ohio.....	Nov. 18.
16276	Bedstead fastenings.....	Sandy Harris.....	Philadelphia, Pa.....	Dec. 23.
15076	Bedsteads.....	William Hutton.....	South Berwick, Maine.....	June 10.
15235	Bedsteads.....	Silas Huddleston.....	Cottage Grove, Ind.....	July 1.
15552	Bedsteads.....	John H. Belter.....	New York, N. Y.....	Aug. 19.
15621	Bedsteads.....	Jacob J. Smith and Jonathan H. Pugh.....	Philadelphia, Pa.....	Aug. 26.
15648	Bedsteads.....	C. H. Gould.....	Concord, N. H.....	Sept. 2.
14668	Bedsteads, metallic.....	Marshall Lefferts.....	New York, N. Y.....	April 15.
15658	Bedstead, spring.....	W. H. Kimball and A. J. French, assignors to themselves and A. H. Noyes.....	Lynn, Mass.....	Sept. 2.
15209	Bedsteads, spring-bottoms for.....	Alvah Foote, assignor to himself, Ira Russell, A. B. R. Sprague, and Henry Phelps.....	North Blandford, Mass.....	June 24.
14514	Bedsteads, wardrobe, combined with other furniture.....	H. R. and J. L. Plimpton.....	Westfield, Mass.....	Mar. 25.
14593	Bells, pressure.....	Jason Barton.....	Middle Haddam, Conn.....	April 8.
15573	Bristle separator.....	Adonijah Kandel.....	New York, N. Y.....	Aug. 19.
14883	Brooms and brushes.....	Thomas H. Powers.....	Nyocena, Wis.....	May 13.
15702	Brushes, wooden part of, machine for manufacturing the.....	Thomas Mitchell.....	Lansingburg, N. Y.....	Sept. 9.
16126	Cans and vessels, apparatus for exhausting air from and hermetically sealing.....	A. M. Purnell.....	Washington, D. C.....	Nov. 25.
14439	Cans, preserve, hermetically sealing.....	Charles Branwhite.....	New York, N. Y.....	Mar. 18.
15088	Cans, preserve, hermetically sealing.....	Charles F. Russell.....	St. Louis, Mo.....	June 10.
14245	Cans, preserve, sealing.....	R. W. Lewis.....	Honesdale, Pa.....	Feb. 12.
15478	Carpet fastenings.....	S. R. C. Denison.....	Rochester, N. Y.....	Aug. 5.
16036	Carpets, fabric for underlaying.....	William S. Pratt, assignor to J. S. C. Thursby.....	Brooklyn, N. Y.....	Nov. 4.
15611	Caster, ball, for trunks and furniture.....	Judson Knight.....	Newark city, N. J.....	Aug. 26.
15946	Casters, bottle.....	Edward Gleason.....	Dorchester, Mass.....	Oct. 21.
15902	Caster-wheels, for furniture, finishing.....	P. B. Tyler.....	Springfield, Mass.....	Oct. 14.
16405	Chairs.....	James Fernald.....	Boston, Mass.....	July 22.
15021	Chairs and other articles, elastic bottoms for.....	Lysander Spooner.....	Boston, Mass.....	June 3.
14507	Chairs, fan rocking.....	Benjamin M. Lewy.....	Montgomery, Ala.....	Mar. 25.
14506	Chairs, fan rocking.....	Konrad Kiefer.....	New York, N. Y.....	Mar. 25.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries	Patentees	Residence.	Date of patent.
14340	Chairs for ships' cabins.....	William Thomas.....	Hingham, Mass.....	May 13.
14331	Chairs, head-rests for.....	C. A. Mills.....	Dubuque, Iowa.....	Oct. 21.
14372	Chairs, invalid.....	Daniel S. James.....	New Market, Va.....	May 13.
14673	Chairs, invalid.....	C. L. Taillaut.....	New York, N. Y.....	Sept. 2.
14877	Chairs, portable.....	Zebulon Lyford.....	Lowell, Mass.....	May 13.
16006	Chairs, rocking.....	Martin Eberhard.....	Philadelphia, Pa.....	Nov. 4.
14262	Clothes-clamps.....	W. H. Towers.....	Philadelphia, Pa.....	Feb. 12.
16065	Clothes-dryers.....	Samuel Morrill.....	Andover, N. H.....	Nov. 11.
14110	Clothes-pins, machine for making.....	Ephraim Parker.....	Burlington, Iowa.....	Jan. 15.
14466	Clothes-pins, machine for making.....	George W. Parker.....	Fitzwilliam, N. H.....	Mar. 18.
15543	Clothes, wringing.....	Robert P. Bradley, assignor to.....	Cuyahoga Falls, Ohio.....	Aug. 12.
14334	Coffee pots.....	Joel Wisner.....	East Aurora, N. Y.....	Feb. 26.
14748	Coffee pots.....	Jacob M. Webb.....	Somerville, Tenn.....	April 22.
15835	Corn, green, from the cob, separating.....	Charles B. Waite and Joseph W. Senor .. Henry Walsh, assignor to H. Walsh and M. P. Espy.....	Fredericksburg, Va.....	Sept. 30.
14855	Corn, green, from the cob, machine for cut- ting.....	William B. Coates.....	Philadelphia, Pa.....	May 13.
14259	Corn, green, instrument or grating.....	Benjamin Taylor.....	Philadelphia, Pa.....	Feb. 12.
14589	Crackers, moulding, machines for preparing dough for.....	F. C. Treadwell, jr.....	New York, N. Y.....	May 13.
14123	Curtain fixtures.....	Lewis White.....	Hartford, Conn.....	Jan. 15.
15258	Curtain fixtures.....	James Stephens.....	New York, N. Y.....	July 1.
15615	Curtain fixtures.....	Purches Miles.....	Hartford, Conn.....	Aug. 26.
15676	Curtain fixtures.....	Ferdinand Wietrich and Conrad Hagen..	New York, N. Y.....	Sept. 2.
15254	Dough, making and kneading, machines for.....	Socrates M. Ridgway.....	St. Michael's, Md.....	July 1.
16267	Egg-beaters, rotary.....	Ralph Collier.....	Baltimore, Md.....	Dec. 23.
14375	Forks.....	Sherburne C. Blodgett.....	Philadelphia, Pa.....	Feb. 19.
16058	Forks for handling heated plates.....	G. W. Hyatt.....	Auburn, N. Y.....	Nov. 11.
15083	Froezers, ice cream.....	Joseph Parisotto.....	Indianapolis, Ind.....	June 10.
15550	Furniture polish.....	John L. Brabyn.....	New York, N. Y.....	Aug. 19.
15375	Graters, nutmeg.....	George Blanchard.....	New York, N. Y.....	July 13.
15740	Gridiron.....	William Bennett.....	New York, N. Y.....	Sept. 30.

1856.

15982	Hook, suspensor, combined, and insect insulator.	Joseph C. Moulton	Fitchburg, Mass.	Oct. 23.
15562	Knife cleaners.	William W. Hopkins	Chesterfield Factory, N. H.	Aug. 19.
14788	Knives, cleaning, machines for.	A. C. Ketchum, assignor to Edward B. Olcott.	New York, N. Y.	April 29.
15266	Macaroni server.	Albert L. Lincoln, assignor to Albert L. Lincoln and Charles M. Foss.	Boston, Mass.	July 1.
14901	Meat, cutting, machines for.	Gustavus V. Brecht.	St. Louis, Mo.	May 20.
15248	Meat, mincing, machine for.	Oren Moses.	Malone, N. Y.	July 1.
15452	Meats, smoking, apparatus for.	John Wright.	Wilmington, Del.	July 29.
15352	Mop heads.	Hiram Thompson and Richard Q. Tuzon.	Lebanon, N. H.	July 15.
16137	Mop heads.	Frederic Allen.	Worcester, Mass.	Dec. 2.
15552	Mosquito canopy.	Levi J. Henry, assignor to Benjamin J. Hart.	New York, N. Y.	Aug. 19.
16226	Pans, bake.	William Beach.	Philadelphia, Pa.	Dec. 16.
15829	Pillows and bolsters into their cases, improvement for putting.	David B. Tiffany.	Xenia, Ohio.	Sept. 30.
15123	Pitchers, molasses.	Henry W. Goodrich.	Boston, Mass.	June 17.
15231	Pitchers, refrigerating.	Franklin D. Hall.	Philadelphia, Pa.	July 1.
14974	Preserve vessels, self-sealing.	William J. Stevenson.	New York, N. Y.	May 27.
15132	Refrigerators.	Samuel Hickok.	Buffalo, N. Y.	June 17.
15545	Refrigerators.	Thaddeus Fairbanks, assignor to John C. Schooley.	St. Johnsbury, Vt.	Aug. 12.
16320	Refrigerators.	Charles Winship.	New Haven, Conn.	Dec. 23.
15450	Sad iron heaters.	Benjamin F. Wheelock.	Mayville, Wis.	July 29.
14219	Scissors.	John Allender.	New London, Conn.	Feb. 12.
14672	Settees, reversible backs of, double acting catch for.	B. F. McCreary.	New York, N. Y.	April 15.
15143	Smoothing irons.	Oscar F. Morrill.	Boston, Mass.	June 17.
15165	Smoothing irons.	Leander W. Boynton.	Worcester, Mass.	June 24.
15723	Smoothing irons, furnaces.	John Taggart, assignor to John Taggart and Vernon Brown.	Roxbury, Mass.	Sept. 9.
14796	Smoothing irons, self-heating.	G. W. Bishop.	Brooklyn, N. Y.	May 6.
15801	Smoothing irons, self-heating.	William D. Cummings.	Washington, Ky.	Sept. 30.
16254	Springs in upholstery, mode of securing.	Wendell Wright.	New York, N. Y.	Dec. 16.
15943	Table and bedsteads, combined.	Charles Baum.	Philadelphia, Pa.	Oct. 21.
	Table, centre, oracular wheel on. (See Class XXII, letter O.)			
15675	Table, self-waiting.	A. Watson.	Falmouth, Ky.	Sept. 2.
14093	Tables, extension.	E. A. Curley.	Westport, Conn.	Jan. 15.
15407	Tables, portable folding.	C. D. Barnitz.	Baltimore, Md.	July 29.

Report of the Committee on the Practice of Medicine

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From 1991 to 1993, the firm was engaged in a project to develop a new system for the management of the firm's financial data. The project was completed in 1993 and the system was implemented in 1994. The system was a success and the firm's financial data was managed more effectively than before.

Item	Description of Work	Location	Period	Status	Comments
1	Project Management	1991-1993	1991-1993	Completed	Project was completed on time and within budget.
2	System Development	1991-1993	1991-1993	Completed	System was developed and implemented successfully.
3	System Implementation	1991-1993	1991-1993	Completed	System was implemented and the firm's financial data was managed more effectively.
4	System Maintenance	1991-1993	1991-1993	Completed	System was maintained and the firm's financial data was managed more effectively.
5	System Upgrade	1991-1993	1991-1993	Completed	System was upgraded and the firm's financial data was managed more effectively.
6	System Replacement	1991-1993	1991-1993	Completed	System was replaced and the firm's financial data was managed more effectively.
7	System Decommissioning	1991-1993	1991-1993	Completed	System was decommissioned and the firm's financial data was managed more effectively.
8	System Archiving	1991-1993	1991-1993	Completed	System was archived and the firm's financial data was managed more effectively.
9	System Restoration	1991-1993	1991-1993	Completed	System was restored and the firm's financial data was managed more effectively.
10	System Backup	1991-1993	1991-1993	Completed	System was backed up and the firm's financial data was managed more effectively.
11	System Recovery	1991-1993	1991-1993	Completed	System was recovered and the firm's financial data was managed more effectively.
12	System Testing	1991-1993	1991-1993	Completed	System was tested and the firm's financial data was managed more effectively.
13	System Deployment	1991-1993	1991-1993	Completed	System was deployed and the firm's financial data was managed more effectively.
14	System Monitoring	1991-1993	1991-1993	Completed	System was monitored and the firm's financial data was managed more effectively.
15	System Reporting	1991-1993	1991-1993	Completed	System was reported and the firm's financial data was managed more effectively.
16	System Documentation	1991-1993	1991-1993	Completed	System was documented and the firm's financial data was managed more effectively.
17	System Training	1991-1993	1991-1993	Completed	System was trained and the firm's financial data was managed more effectively.
18	System Support	1991-1993	1991-1993	Completed	System was supported and the firm's financial data was managed more effectively.
19	System Upgrade	1991-1993	1991-1993	Completed	System was upgraded and the firm's financial data was managed more effectively.
20	System Replacement	1991-1993	1991-1993	Completed	System was replaced and the firm's financial data was managed more effectively.

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Year	1990	1991	1992	1993	1994
1990	100	100	100	100	100
1991	100	100	100	100	100
1992	100	100	100	100	100
1993	100	100	100	100	100
1994	100	100	100	100	100

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14542	Printing cylinder	Justus Webster and Samuel H. Folsom...	Lowell, Mass.....	1856.
14295	Printing from engraved plates, machine for...	James F. Starrett	New York, N. Y.....	Mar. 25.
15164	Printing instruments for the blind	A. Ely Beach	Stratford, Conn.....	Feb. 19.
14919	Printing machine	John M. Jones.....	Palmyra, N. Y.....	June 24.
14907	Printing machine	John H. Cooper.....	Philadelpha, Penn.....	May 20.
14214	Printing machines, calico, movement for the doctors of.	John Standing, assignor to himself and James Baxendale.	Fall River, Mass	May 20.
14789	Printing, machines for embossing and.....	Saml. W. Love, assignor to himself and Jacob M. Beck.	Philadelphia, Penn.....	Feb. 5.
14016	Printing press	George P. Gordon	Philadelphia, Penn.....	April 29.
14558	Printing press	George F. Folsom	New York, N. Y	Jan. 1.
15437	Printing press	Thomas and Alfred Parkes.....	Roxbury, Mass	April 1.
15477	Printing press	William H. Danforth	Brooklyn, N. Y	July 29.
15740	Printing press	A. and B. Newbury	Salem, Mass	Aug. 5.
16109	Printing presses.....	F. L. Bailey.....	Windham Centre, N. Y	Sept. 16.
16221	Printing presses.....	Sargent, Charles G., and Abram Keach, assignors to Abram Keach and Caleb M. Marvel.	Boston, Mass.....	Nov. 25.
16263	Printing presses.....	G. H. Babcock	Lowell, Mass.....	Dec. 9.
16138	Printing presses, feeding paper to.....	Moses S. Beach.....	Westerley, R. I.....	Dec. 23.
16168	Printing presses, feeding paper to, machine for.	David Baldwin.....	Brooklyn, N. Y.....	Dec. 2.
16311	Printing presses, feeding paper to, machine for.	Moses S. Beach.....	Godwinville, N. J	Dec. 9.
14084	Printing presses, machine for feeding sheets of paper to.	Samuel I. Chapman.....	Brooklyn, N. Y.....	Dec. 23.
15639	Printing press, feeding sheets of paper to, machine for.	David Babson.....	Charleston, S. C.....	Jan. 15.
15312	Printing press, hand	Daniel K. Winder.....	Groton, Conn.....	Sept. 2.
16270	Printing press, hand	Platt Evens, jr.....	Cincinnati, Ohio.....	July 8.
15428	Printing press, portable.....	Samuel W. Lowe, assignor to Samuel Lowe and W. F. Scheible.	Cincinnati, Ohio.....	Dec. 23.
	Printing telegraph, electro-magnetic. (See Class VIII, letter T.)		Philadelphia, Penn	July 29.

14773	Printing telegraph, electro-magnetic. (See Class VIII, letter T.)	John McInnes	Braintree, Mass	April 29.
15574	Printing woollen and other fabrics, machine for.	Edwin A. Russell	Hookset, N. H.	Aug. 19.
15764	Stamp, hand	Charles W. Hackett.....	Elmyra, N. Y.	Sept. 23.
16167	Stamp, hand	Nathan Ames, assignor to Boston Hand-Stamp Company.	Saugus, Mass	Dec. 2.
14548	Stamp, self-inking	Nathan Ames.....	Saugus, Mass	April 1.
14670	Stencilling window-shades, apparatus for. (See Class XVII, letter W.)	William Loyd	Philadelphia, Pa.	April 15.
15386	Stereoscope case.....	Edward Pelouze, jr.....	Philadelphia, Pa.	July 22.
15340	Type-casting machines, valve for.....	Julius J. Koenig	Chicago, Ill.....	July 15.
15501	Type, composing and distributing, machine for.	Richard M. Hoe	New York, N. Y.....	Aug. 5.
16102	Types, securing, on rotary beds	C. M. Zimmerman.....	Philadelphia, Pa.	Nov. 18.
14860	Violins, &c., tail-piece for	Samuel F. French.....	Franklin, Vt.....	May 13.
14056	Violins, bow for	Morris Falkenaw, Morris Pollak, and Solomon Wiener.	Hoboken, N. J	Jan. 8.
15073	Watch-key	William Hart.....	Maysville, Wis.....	June 10.
	Watchmakers, tools for			

CLASS XIX.—FIRE-ARMS AND IMPLEMENTS OF WAR, and parts thereof, including the manufacture of shot and gunpowder.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15315	Blastic compound. (See Class IV, letter C.) Cannon automatic.....	Chas. E. Barnes, assignor to C. E. Barnes and M. W. Oliver.	Lowell, Mass.....	1856. July 8.
14215	Cannon, many-chambered breech-loading....	Charles C. Terrel, assignor to Charles C. Terrel and S. Crawford.	Shullsburg, W.a.....	Feb. 5.
15357	Cannon, mode of charging.....	Josiah Dodge.....	Dummerston, Vt.....	July 15.
14850	Cartridge opener.....	Jesse S. Butterfield and Simeon Marshall.	Philadelphia, Penn.....	May 13.
15141	Cartridges.....	Edward Maynard.....	Washington, D. C.....	June 17.
15707	Cartridges.....	Julius Riedel.....	Pleasant Hill, Ky.....	Sept. 9.
15996	Cartridges.....	G. W. Morse.....	East Baton Rouge, La.....	Oct. 28.

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NO.	INVENTIONS OR DISCOVERIES.	PATENTEES.	RESIDENCE.	DATE OF PATENT.
15369	Cartridges, fixed.....	George Buckel and Edward Dersh.....	Monroe, Mich.....	1856.
14077	Fire-arms.....	James H. Merrill.....	Baltimore, Md.....	July 22.
14095	Fire-arms.....	Joseph C. Day.....	Hackettstown, N. J.....	Jan. 8.
14667	Fire-arms.....	Palmer Lancaster.....	Burr Oak, Mich.....	Jan. 15.
14774	Fire-arms.....	Frederick Newberry.....	Albany, N. Y.....	April 15.
14905	Fire-arms.....	Samuel Colt.....	Hartford, Conn.....	April 29.
15032	Fire-arms.....	Frederick B. E. Beaumont.....	Upper Woodball, Barnsley, county of York, England.	May 20, 1856; England, March 3, 1853.
15041	Fire-arms.....	George Kesling.....	Lebanon, Ohio.....	June 3.
15144	Fire-arms.....	Henry S. North.....	Middletown, Conn.....	June 17.
15202	Fire-arms.....	James Warner.....	Springfield, Mass.....	June 24.
15167	Fire-arms.....	Fordyce Beals.....	New Haven, Conn.....	June 24.
15292	Fire-arms.....	James E. Halsey.....	New York, N. Y.....	July 8.
15347	Fire-arms.....	George H. Soule.....	Jersey City, N. J.....	July 15.
15521	Fire-arms.....	Frederick D. Newbury, assignor to R. V. Dewitt, jr.	Albany, N. Y.....	Aug. 12.
15522	Fire-arms.....	Abner N. Newton.....	Richmond, Ind.....	Aug. 12.
15516	Fire-arms.....	Frederick W. Hoffman.....	New York, N. Y.....	Aug. 12.
15734	Fire-arms.....	E. H. Graham.....	Manchester, N. H.....	Sept. 16.
15797	Fire-arms.....	Joseph Adams.....	Cleveland, Ohio.....	Sept. 30.
15955	Fire-arms.....	Dr. Alexandre Le Mat.....	New Orleans, La.....	Oct. 21.
16124	Fire-arms.....	Dr. Alexandre Le Mat.....	New Orleans, La.....	Nov. 25.
14057	Fire-arms, breech-loading.....	L. H. Gibbs.....	New York, N. Y.....	Jan. 8.
14253	Fire-arms, breech-loading.....	Wm. H. Robertson and Geo. W. Simpson.	Hartford, Conn.....	Feb. 12.
14491	Fire-arms, breech-loading.....	A. E. Burnside.....	Bristol, R. I.....	Mar. 25.
14554	Fire-arms, breech-loading.....	Hezekiah Conant.....	Hartford, Conn.....	April 1.
14780	Fire-arms, breech-loading.....	Simon F. Stanton.....	Manchester, N. H.....	April 29.
14949	Fire-arms, breech-loading.....	Nathan S. Clement.....	Worcester, Mass.....	May 27.
15072	Fire-arms, breech-loading.....	Henry Gross.....	Tiffin, Ohio.....	June 10.
15240	Fire-arms, breech-loading.....	B. F. Joslyn.....	Worcester, Mass.....	July 1.
15307	Fire-arms, breech-loading.....	William Mt. Storm.....	New York, N. Y.....	July 8.
15496	Fire-arms, breech-loading.....	Gilbert Smith.....	Buttermilk Falls, N. Y.....	Aug. 5.



No.	Inventions or discoveries.	Patentees	Residence	Date of patent.
15760	Shells, explosive.....	A. M. George.....	Nashua, N. H.....	1856.
14133	Shells, explosive, eccentric.....	Wm. W. Hubbell.....	Philadelphia, Pa.....	Sept. 23.
15075	Shot and shell, sabot for rotating.....	Wm. W. Hubbell.....	Philadelphia, Pa.....	Jan. 22.
14151	Shot pouches.....	Joseph T. Capewell.....	Woodbury, Conn.....	June 10.
15651	Shot pouches, charges for.....	John M. Hathaway.....	New York, N. Y.....	Jan. 29.
				Sept. 2.

CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, including trusses, dental instruments, bathing apparatus, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15626	Cupping.....	Loyall Tillotson.....	Thompson, Ohio.....	1856.
15568	Cupping instruments.....	Sherman McLean.....	Reynale's Basin, N. Y.....	Aug. 26.
14739	Emissions, nocturnal, rings to prevent.....	L. D. Sibley.....	Northampton, Mass.....	Aug. 19.
15215	Forceps, dental.....	Hazin J. Batchelder.....	West Fairlee, Vt.....	April 22.
15730	Forceps, dentist's.....	John G. Coates.....	Big Lick, Va.....	July 1.
14085	Genital organs, apparatus for curing varicocele, sterility, impotency, and other diseases of the.....	John Cheever.....	Boston, Mass.....	Sept. 16.
15372	Hands and arms, artificial.....	John S. Drake.....	Boston, Mass.....	Jan. 15.
15831	Legs, artificial.....	O. D. Wilcox.....	Easton, Pa.....	July 22.
14836	Legs, artificial, construction of.....	William Selpho.....	New York, N. Y.....	Sept. 30.
14293	Pessaries, construction of.....	F. Roesler.....	New York, N. Y.....	May 6.
	Phrenology, apparatus for teaching. (See Class XXII.)			Feb. 19.
14161	Pill-making machines.....	Noah W. Kumlér.....	Cincinnati, Ohio.....	Jan. 29.
16066	Respirator, medical.....	E. M. Murphey.....	Lexington, Ill.....	Jan. 29.
14853	Splint, surgical.....	John Clough and Daniel M. Cummings..	Enfield, N. H.....	Nov. 11.
15504	Supporters, invalid.....	James T. Alston.....	Raleigh, N. C.....	May 13.
14524	Syringe-bottles for medicinal agents.....	John Stull.....	Philadelphia, Pa.....	Aug. 12.
				Mar. 25.

Date			Time			Location			Remarks		
Day	Month	Year	Hour	Minute	Second	Latitude	Longitude	Altitude	Wind	Temp	Pressure
1	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
2	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
3	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
4	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
5	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
6	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
7	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
8	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
9	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
10	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
11	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
12	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
13	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
14	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
15	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
16	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
17	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
18	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
19	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
20	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
21	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
22	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
23	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
24	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
25	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
26	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
27	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
28	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
29	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
30	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0
31	1	1900	12	00	00	34° 30' N	118° 15' W	1000	SE	65	30.0

15440	Detector, pickpocket.....	S. W. Ruggles.....	Fitchburg, Mass.....	July 29.
15889	Fans, automatic, escapement movement for.....	Dow J. Mozart.....	Xenia, Ohio.....	Oct. 14.
16014	Fishing implement.....	Flmore Horton.....	Bristol, Conn.....	Nov. 4.
14587	Fishing lead.....	Wooster Smith.....	South Thomaston, Me.....	April 1.
15466	Fishing-rods, reel for.....	John A. Bailey, assignor to John Warren.....	Jersey City, N. J.....	Aug. 5.
14766	Fishing tackle.....	Julio T. Bucl.....	Whitehall, N. Y.....	April 23.
15279	Hitching horses, clothes-lines, &c., apparatus for.....	Edward S. Boynton.....	East Hartford, Conn.....	July 8.
15337	Hogs, slaughtering, apparatus for.....	Thomas J. Godman.....	Madison, Ind.....	July 15.
16312	Horse fastening.....	James Bolton.....	Richmond, Va.....	Dec. 23.
15483	Horses, harness for shoeing. (See Class XVI, letter H.)			
15483	Ice, breaking, instrument for.....	Isaac H. Giffing.....	New York, N. Y.....	Aug. 5.
16152	Ice saw.....	S. Scotton.....	Richmond, Ind.....	Dec. 2.
15226	Labels, metallic hook for.....	Samuel B. Fay.....	New York, N. Y.....	July 1.
15883	Ladder, fireman's.....	Dominico Giambastiani.....	Washington D. C.....	Oct. 14.
15941	Lard rendering kettles. (See Class IV, letter L)			
15941	Mackerel, splitting, machine for.....	Sidney S. Turner, assignor to S. S. Turner and Elmer Townsend.....	Lewiston, Me.....	Oct. 21.
15393	Match, friction, machine.....	Calvin D. Smith and Horace Patterson.....	Worcester, Mass.....	July 22.
14782	Matches, friction, machine for manufacturing.....	Alexander Underwood.....	Ilion, N. Y.....	April 29.
15238	Match machine.....	Lawrence Holmes.....	Paterson, N. J.....	July 1.
14655	Milk, concentration of. (See Class IV, letter M.)			
14910	Mosquito nets, frames for.....	Samuel E. Hartwell.....	New York, N. Y.....	April 15.
16019	Oracular wheel or centre table.....	William O. George.....	Richmond, Va.....	May 20.
14685	Packages, spring frame for.....	Henry B. Osgood.....	Dorchester, Mass.....	Nov. 4.
14904	Phrenology, apparatus for touching.....	George P. Wilcox and William Butler.....	Little Falls, N. Y.....	April 15.
16231	Pill machines.....	Henry E. Chapman.....	Albany, N. Y.....	May 20.
14740	Shearing sheep. (See Class I.)			
16231	Skate-runners.....	John E. Forbes.....	Hoboken, N. J.....	Dec. 16.
14586	Skates.....	Ferdinand Klein.....	Essex county, N. J.....	April 1.
14624	Slate frame.....	Edwin Young.....	Philadelphia, Pa.....	April 8.
15366	Sleigh bells to straps, mode of attaching.....	Abner G. Bevin.....	Chatham, Mass.....	July 22.
14490	Sugar, loaf, machine for cutting.....	Adolph and Felix Brown.....	New York, N. Y.....	Mar. 25.
14740	Tent, conical.....	Major H. H. Sibley.....	U. S. army.....	April 22.
15378	Trap, fly.....	Joseph Hyter.....	Kent, Ind.....	July 22.
15464	Trap, fly.....	Samuel Arnold.....	Wilson county, Tenn.....	Aug. 5.
15752	Trap, fly.....	S. Arnold.....	Green Hill, Wilson co., Tenn.....	Sept. 23.
15848	Trap, fly.....	George Gilbert.....	Westville, Conn.....	Oct. 7.

Classified List of Patents issued—Continued.

No	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16217	Trap for catching fish, &c.....	Levi Van Hoesen.....	Westville, Conn.....	1856.
14531	Trap, rat, self-setting.....	Samuel Beaumont.....	New York, N. Y.....	Dec. 9.
14336	Trap, roach.....	John Goodyear, jr., and Thomas I. Berry, assignors to John Goodyear, jr., Thomas I. Berry, and William M. Porter.	Philadelphia, Pa.....	Mar. 25. Feb. 26.
14612	Whip handles, machine for tapering whale bone for.	L. Hull.....	Charlestown, Mass.....	April 8.
14669	Whip socket.....	William H. Lyman.....	Newark, N. J.....	April 15.

EXTENSIONS DURING THE YEAR 1856.

Inventions or discoveries.	Patentees.	Residence.	Date of ex- tension	Date of patent.
Brick press, construction of the.....	Alfred Hall.....	Perth Amboy, N. J.....	1856. Sept. 3	Sept. 3, 1842.
Door locks.....	John P. Sherwood.....	Fort Edward, N. Y.....	Dec. 15	Dec. 17, 1842; re-issued Oct. 7, 1856.
Engines, locomotive steam, manner of construct- ing, by which they adapt themselves to the curves and undulations of the road.	Matthias W. Baldwin.....	Philadelphia, Penn.....	Aug. 22	Aug. 25, 1842.
Felting for coats, hats, &c.....	Marmaduke Osborne.....	New York, N. Y.....	May 21	May 28, 1842.
Lamps for essential oils, &c.....	Michael B. Dyott.....	Philadelphia, Penn.....	May 28	May 30, 1842.
Metallic surfaces, particularly sawplates, machinery for grinding and polishing.	Richard M. Hoe.....	New York, N. Y.....	May 26	May 30, 1842.
Paper, ruling, machines for.....	George L. Wright.....	West Springfield, Mass.....	May 91	May 28, 1842.
Pins, shielded, for securing shawls, diapers, &c., manner of constructing.	Thomas Woodward.....	New York, N. Y.....	May 7	May 7, 1842.
Presses for pressing hay, cotton, &c., method of constructing.	S. W. Bullock.....	New York, N. Y.....	Mar. 91	March 23, 1842; re-issued Aug. 14, 1854.

Printing presses.....	Jeptha A. Wilkinson.....	Fire Place, N. Y.....	Sept. 15	Jan. 4, 1853; England, Sept. 23, 1842.
Printing press, power, additional improvements in the.....	Isaac Adams.....	Boston, Mass.....	Aug. 18	March 2, 1836; re-issued June 13, 1848.
Printing press, power, printing machine called the.....	Isaac Adams.....	Boston, Mass.....	Aug. 25	Oct. 4, 1830; extended Sept. 17, 1844.
Pumps and fire engines.....	B. T. Babbit, S. C. Higbee, and P. W. Plantz.	Little Falls, N. Y.....	Oct. 7	Oct. 7, 1842.
Reaping machines.....	Jonathan Read.....	Alton, Ill.....	Mar. 10	March 12, 1842.
Screws, wood, machine for cutting the threads of.....	Cullen Whipple, assignor to the New England Screw Company, assignors to Cullen Whipple.	Providence, R. I.....	Aug. 16	Aug. 18, 1842; re-issue March 5, 1850; re-issue June 13, 1856.
Shoe pegs, machine for cutting.....	Stephen K. Baldwin.....	Gilford, N. H.....	July 8	July 16, 1842.
Spark arrestors.....	William C. Grimes.....	Philadelphia, Penn.....	Jan. 28	Feb. 12, 1842; re-issue Dec. 25, 1855.
Stoves, heating, construction of.....	Zephaniah Bosworth.....	Harmar, Ohio.....	Mar. 31	April 6, 1842.
Streets, sweeping and cleaning, machine for.....	Joseph Whitworth.....	Manchester, England.....	July 21	June 1, 1843; Eng'and, Aug. 2, 1842.
Threshing and winnowing grain, machines for.....	Andrew Ralston.....	West Middletown, Penn.....	Feb. 18	Feb. 21, 1842; re-issue Feb. 15, 1856.
Vessels, steering apparatus for.....	Geo. W. & F. B. Robinson.....	Boston, Mass.....	Sept. 25	Sept. 30, 1842.
Warps, dressing, manner of constructing brushes for.....	Samuel Taylor.....	Cambridge, Mass.....	May 21	May 28, 1842.
Water-wheels.....	L. W. & G. W. Blake.....	Pepperell, Mass.....	April 21	April 21, 1842.
Water-wheels.....	Reuben Rich.....	Salmon River, P. O., N. Y.....	July 8	July 8, 1842.
Window-blind hinges and fastenings.....	William Baker.....	Utica, N. Y.....	Sept. 8	Sept. 17, 1842.

DISCLAIMERS ENTERED DURING THE YEAR 1856.

Inventions or discoveries.	Patentees.	Residence.	Date of disclaimer.	Date of patent.
Lamps.....	Michael B Dyott.....	Philadelphia, Pa.....	1856.	May 30, 1842.
Looms.....	John G. Melville and Wm. Brayshaw.	Wetheredville, Md.....	May 12 Jan. 21	April 24, 1855.

ADDITIONAL IMPROVEMENTS GRANTED DURING THE YEAR 1856.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Improvements added.
143	Blinds, window, means for holding	Henry A. Frost	Worcester, Mass	Jan. 23, 1856	1856.
151	Brick machines, rotary	George Crangle	Philadelphia, Pa.	June 3, 1856	May 6.
154	Brick machines, rotary	George Crangle	Philadelphia, Pa.	June 3, 1856	Sept. 9.
					Sept. 9; 2d additional improvement Nov. 25.
133	Candlesticks	Abner Whiteley	Springfield, Ohio	Jan. 10, 1856	Feb. 5.
144	Carriages, coupling for	Abram J. Gibson	Clinton, Mass	Sept. 12, 1854	May 27.
150	Carriage tops, raising and lowering, apparatus for.	Alanson Quigly	Sheldrake, N. Y.	April 22, 1856	Aug. 26.
139	Cars, railroad, ventilating	George F. Foote	Buffalo, N. Y.	July 11, 1854	April 8.
132	Cloth, ornamental felt, manufacture of	O. B. Tomlinson	Athens, Pa.	June 5, 1855	Feb. 5.
134	Daguerreotype cases	John F. Mascher	Philadelphia, Pa.	Mar. 8, 1853	Feb. 19.
136	Excavating machine	J. J. Savage	New York, N. Y.	Jan. 8, 1856	Mar. 11.
142	Faucet	Moses Woodbury	Boston, Mass	Mar. 11, 1856	May 6.
153	Fenders for fire-places	John W. Truslow	Lewisburg, Va.	July 15, 1856	Sept. 30.
152	Fire-arms	Frederick D. Newbury, assignor to Richard Varick De Witt.	Albany, N. Y.	Aug. 12, 1856	Sept. 16.
145	Fire-arms, breech-loading	Abner N. Newton	Richmond, Ind.	June 27, 1854	June 17.
157	Fire-arms, breech-loading	Dr. Abner N. Newton	Richmond, Ind.	June 27, 1854	Dec. 23.
138	Gas-burner	Charles H. Johnson	Boston, Mass	June 26, 1855	Mar. 18.
149	Gas-ater	William F. Shaw	Boston, Mass	Jan. 23, 1855	July 22.
140	Harvesters, grain, binders for	George W. N. Yost	Pittsburg, Pa.	Jan. 1, 1856	April 8.
141	Harvesters, grass	George Esterly	Heart Prairie, Wis.	June 27, 1854	April 22.
155	Harvesting-machines	George Esterly	Heart Prairie, Wis.	Oct. 22, 1844	Nov. 25.
156	Hubs for carriages	Joseph Smith	Delaware, Ohio	Feb. 19, 1856	Dec. 16.
131	Hydraulic heaters	L. W. Leeds and R. M. Smith	Philadelphia, Pa.	May 16, 1854	Feb. 5.
147	Looms	James O. Leach	Ballston, N. Y.	Oct. 30, 1855	July 8.
137	Mach-machines	Adolph Hamner	Philadelphia, Pa.	Jan. 9, 1855	Mar. 18.
135	Mills, grinding	Amory Felton	Troy, N. Y.	Jan. 2, 1855, reissue Jan. 29, 1856.	Feb. 26.

148	Pumps, method of regulating by wind-wheel.	Jacob W. Goodwin and Moses C. Hawkins.	Edenborough, Pa.	April 8, 1856	July 15.
146	Vessels, war, protecting bulwarks for...	William Ballard.....	New York, N. Y.	Nov. 1, 1853	July 1.

REISSUES DURING THE YEAR 1856.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of re-issue.
385	Apple parers	Charles P. Carter.....	Ware, Mass.....	Oct 16, 1849.....	1856. Aug. 12.
395	Boats, life, folding.....	C. Locher	New York, N. Y.	Jan. 2, 1855.....	Sept. 16.
392	Bomb-lance for killing whales.....	C. C. Brand.....	Norwich, Conn.....	June 22, 1852.....	Aug. 26.
404	Boring machine.....	A. Wyckoff and E. R. Morrison, assignors to A. Wyckoff.	Elmira, N. Y.....	Sept. 25, 1855.....	Oct. 14.
399	Buff for polishing spoons and other articles.	Luther Boardman.....	East Haddam, Conn.....	Dec. 15, 1843.....	Oct. 7.
403	Cans, preserve, self-sealing	Robert Arthur.....	Philadelphia, Pa.....	Jan. 2, 1855; reissue June 10, 1856.	Oct. 14.
417	Carpets, manufacturing	John G. McNair.....	Norwich, Conn.....	Aug. 7, 1855.....	Dec. 23.
353	Cars, &c., railroad ticket register for...	William Apperly.....	New York, N. Y.	May 1, 1855.....	Feb. 19.
360	Cars, railroad	B. J. La Mothe.....	New York, N. Y.....	April 4, 1854.....	Mar. 18.
367	Cellars, wall and floors of, mode of constructing.	A. R. Moert	New York, N. Y.....	Feb. 26, 1856.....	April 8.
364	Chain cables, arrangement of means for working and stoppering.	Thomas Brown.....	London, England.....	July 25, 1854; England, April 20, 1847.	Mar. 25.
412	Curry-combs	William Beach.....	Philadelphia, Pa.....	Mar. 13, 1849; reissue Feb. 12, 1850.	Dec. 9.
373	Furnace, annealing	J. Joseph Eagleton.....	New York, N. Y.....	May 20, 1856.....	June 24.
383	Furnaces, bagasse	Samuel H. Gilman.....	New Orleans, La	Dec. 4, 1855.....	Aug. 5.
398	Furnaces for burning wet fuel.....	Moses Thompson.....	New Orleans, La	April 10, 1855.....	Oct. 7.
419	Gas-fittings, machine for reaming and tapping.	Henry A. Chapin.....	Springfield, Mass.....	July 1, 1856.....	Dec. 23.
407	Gas, heating by, apparatus for.....	William F. Shaw.....	Boston, Mass.....	Feb. 26, 1856.....	Oct. 28.
379	Gins, cotton.....	R. A. L. McCurdy, assignor to David G. Olmstead	Sabine Parish, La.....	June 26, 1855.....	July 15.
415	Gun, magazine, repeating and needle...	Edward Lindner.....	Vicksburg, Miss.....	June 27, 1854.....	Dec. 23.

Business Development and Financial Performance

Item	Description	Amount	Unit	Year	Status	Notes
1	Business Development	100	100	100	100	100
2	Financial Performance	100	100	100	100	100
3	Business Development	100	100	100	100	100
4	Financial Performance	100	100	100	100	100
5	Business Development	100	100	100	100	100
6	Financial Performance	100	100	100	100	100
7	Business Development	100	100	100	100	100
8	Financial Performance	100	100	100	100	100
9	Business Development	100	100	100	100	100
10	Financial Performance	100	100	100	100	100
11	Business Development	100	100	100	100	100
12	Financial Performance	100	100	100	100	100
13	Business Development	100	100	100	100	100
14	Financial Performance	100	100	100	100	100
15	Business Development	100	100	100	100	100
16	Financial Performance	100	100	100	100	100
17	Business Development	100	100	100	100	100
18	Financial Performance	100	100	100	100	100
19	Business Development	100	100	100	100	100
20	Financial Performance	100	100	100	100	100
21	Business Development	100	100	100	100	100
22	Financial Performance	100	100	100	100	100
23	Business Development	100	100	100	100	100
24	Financial Performance	100	100	100	100	100
25	Business Development	100	100	100	100	100
26	Financial Performance	100	100	100	100	100
27	Business Development	100	100	100	100	100
28	Financial Performance	100	100	100	100	100
29	Business Development	100	100	100	100	100
30	Financial Performance	100	100	100	100	100
31	Business Development	100	100	100	100	100
32	Financial Performance	100	100	100	100	100
33	Business Development	100	100	100	100	100
34	Financial Performance	100	100	100	100	100
35	Business Development	100	100	100	100	100
36	Financial Performance	100	100	100	100	100
37	Business Development	100	100	100	100	100
38	Financial Performance	100	100	100	100	100
39	Business Development	100	100	100	100	100
40	Financial Performance	100	100	100	100	100
41	Business Development	100	100	100	100	100
42	Financial Performance	100	100	100	100	100
43	Business Development	100	100	100	100	100
44	Financial Performance	100	100	100	100	100
45	Business Development	100	100	100	100	100
46	Financial Performance	100	100	100	100	100
47	Business Development	100	100	100	100	100
48	Financial Performance	100	100	100	100	100
49	Business Development	100	100	100	100	100
50	Financial Performance	100	100	100	100	100

368	Photographic impressions, preparation of oil ground to receive.	Joel H. Tatum	Baltimore, Md.	April 15, 1856.	May 13.
384	Photographic pictures on glass.	James A. Cutting	Boston, Mass.	July 11, 1854.	Aug. 12.
405	Piano-forte action.	Daniel H. Shirley	Boston, Mass.	Nov. 28, 1854.	Oct. 21.
418	Plane, moulding, multiform.	Thomas D. Worrall, assignor to M. Paul, assignor to Thomas D. Worrall, alias Thomas Worrall.	Mount Holly, N. J.	Aug. 29, 1854.	Dec. 23.
337	Ploughs	Samuel Hulbert	Ogdensburg, N. Y.	Sept. 20, 1853; Canada, Sept. 20, 1852.	Jan. 1.
350	Polishing stone, metals, &c.	Albert Broughton	Malone, N. Y.	Nov. 7, 1854; antedated Oct. 24, 1854.	Feb. 12.
370	Preserve cans, self-sealing	Robert Arthur	Philadelphia, Pa.	Jan. 2, 1855.	June 10.
338	Presses, cotton	Nathan Chapman	Myrtle River, Conn.	Aug. 8, 1854.	Jan. 8.
366	Printing presses	George P. Gordon	New York, N. Y.	Aug. 5, 1851.	April 8.
397	Pumps, rotary	John Broughton	Chicago, Ill.	June 10, 1856.	Sept. 30.
386	Railroad chairs, wrought-iron, machine for making	William Van Anden, assignor to William Bushnell, assignor to the American Railroad Chair Manufacturing Company, assignors to A. Friar, J. Rowe, and W. Van Anden	New York, N. Y.	April 30, 1850.	Aug. 12.
381	Raking and loading hay, machine for	Joseph Smith	Poughkeepsie, N. Y.	June 3, 1856.	July 22.
387	Reaping machines (Division A)	Jonathan Read	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
388	Reaping machines (Division B)	Jonathan Read	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
389	Reaping machines (Division C)	Jonathan Read	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
390	Reaping machines (Division D)	Jonathan Read	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
391	Reaping machines (Division E)	Jonathan Reed	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
394	Saddles, harness	John T. Denniston	Lyons, N. Y.	Nov. 20, 1846.	Sept. 9.
408	Saddles, harness	A. H. Gazlay, assignor to O. B. North & Co.	Saratoga Springs, N. Y.	Mar. 14, 1848.	Oct. 28.
365	Sawing machine.	Wm. P. Wood, assignor to W. P. Wood and John S. Gallaher, jr., and John S. Gallaher, jr., assignor to W. P. Wood.	Washington, D. C.	Feb. 26, 1856.	Mar. 25.
393	Saws, reciprocating, method of hanging and straining.	I. N. Forrester	Centreville, Va.	Oct. 30, 1855.	Sept. 2.
371	Screws, wood, machine for cutting the threads of.	Cullen Whipple	Providence, R. I.	Aug. 18, 1842; reissue Mar. 5, 1850.	June 13.

Reissues for the year 1856—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of re-issue.
378 Seine-needles, machinery for filling.....	H. M. Glines, assignor to John M. Stanton and Simon F. Stanton, assignors to P. Bennett, J. Kendrick, and L. A. Cook.	Providence, R. I.....	Oct. 2, 1855.....	1856. July 15.
343 Sewing machines	Thomas J. W. Robertson, assignor to self and A. E. Beach.	New York, N. Y	Mar. 20, 1855.....	Jan. 15.
345 Sewing machines	Allen B. Wilson.....	Waterbury, Conn.....	Nov. 12, 1850.....	Jan. 15.
346 Sewing machines, (division)	Allen B. Wilson.....	Waterbury, Conn.....	Nov. 12, 1850.....	Jan. 15.
355 Sewing machines	William H. Johnson.....	Granville, Mass	Mar. 7, 1854.....	Feb. 26.
363 Sewing machines	Sidney S. Turner, assignor to Elmer Townsend	Boston, Mass.....	Aug. 22, 1854.....	Mar. 25.
410 Sewing machines	A. Swingle, assignor to E. Townsend	Westborough, Mass... }	July 2, 1856.....	Nov. 4.
414 Sewing machines	A. B. Wilson.....	Boston, Mass.....	Nov. 12, 1850; reissue Jan. 22, 1856.	Dec. 9.
352 Sewing or stitching straight seams, machines for.	J. J. Greenough, assignor to J. M. Singer and Edward Clark.	Pittsfield, Mass.....	Feb. 21, 1842.....	Feb. 12.
409 Shoe-pegs, machine for cutting.....	Stephen K. Baldwin.....	New York, N. Y.....	July 16, 1842; extended July 8, 1856.	Nov. 4.
344 Silica, apparatus for dissolving.....	Benjamin Hardinge.....	Gilford, N. H.....	May 8, 1855.....	Jan. 22.
377 Sowing machine.....	P. Seymour.....	New York, N. Y.....	May 7, 1815.....	July 15.
351 Spike machine	A. M. George.....	East Bloomfield, N. Y...	Dec. 18, 1855.....	Feb. 12.
356 Spark and gas consumers.....	David Matthew.....	Nashua, N. H.....	Feb. 20, 1849; reissue, Oct. 4, 1843.	Feb. 26.
357 Spark arresters.....	David Matthew.....	Philadelphia, Penn.....	Dec. 31, 1840; extended, Dec. 27, 1854.	Mar. 4.
402 Stone, artificial.....	St. Julien Ravenal.....	Charleston, S. C.....	Aug. 12, 1856.....	Oct. 14.
342 Threshing and winnowing grain, machines for.	Andrew Ralston.....	Middletown, Penn.....	Feb. 21, 1842.....	Jan. 15.
349 Tonguing and grooving machines.....	Charles W. Brown.....	Boston, Mass.....	Aug. 14, 1844.....	Feb. 5.
339 Types, composing and setting, machine for.	W. S. Loughborough.....	Rochester, N. Y.....	Oct. 23, 1855.....	Jan. 8.
382 Valves, operating, in direct acting steam-engines.	Wm. H. Guild and Wm. F. Garrison....	Brooklyn, N. Y.....	Mar. 27, 1855.....	July 29.

375	Watches, securing pinions, &c., of, in lathes.	James M. Bottom.....	New York, N. Y.....	July 15, 1851.....	July 8.
362	Web for cloth of wool, hair or other suitable substance, machine for forming the, without spinning or weaving.	John Arnold, deceased, legal representatives of, assignors to Union Manufacturing Company.	Norwalk, Conn.....	July 15, 1829; extended by Congress 14 years from Mar. 28, 1854.	Mar. 18.

PATENTS FOR DESIGNS GRANTED DURING THE YEAR 1856.

No.	Designs.	Patentees.	Residence.	Date of patent.
858	Bedsteads, metallic.....	John B. Wickersham	New York, N. Y.....	Dec. 23.
763	Bottle casters and egg-cup stands.....	R. Gleason, jr., assignor to R. Gleason & Sons.	Dorchester, Mass.....	Feb. 12.
755	Bottles, perfumery.....	Augustus E. Wetherill.....	Cincinnati, Ohio.....	Jan. 8.
761	Bricks, moulded.....	James M. Thompson.....	Philadelphia, Penn	Feb. 12.
838	Bust of J. C. Fremont	John Gott.....	Albany, N. Y	Oct. 7.
784	Casters	William H. Green	Meriden, Conn.....	April 22.
777	Chandeliers	Samuel B. H. Vance, assignor to Mitchell, Bailey, & Co.	New York, N. Y.....	April 8.
778	Chandeliers	Samuel B. H. Vance, assignor to Mitchell, Bailey, & Co.	New York, N. Y.....	April 8.
771	Clock-case fronts	Nicholas Muller.....	New York, N. Y.....	April 1.
787	Clock-case fronts, A	Nicholas Muller.....	New York, N. Y.....	April 29.
787	Clock-case fronts, B.....	Nicholas Muller.....	New York, N. Y.....	April 29.
813	Clock-case fronts, No. 2.....	Nicholas Muller.....	New York, N. Y.....	July 1.
812	Clock-case fronts, base of, No. 1	Nicholas Muller.....	New York, N. Y.....	July 1.
818	Clock fronts.....	J. and R. Shepherd.....	New York, N. Y.....	July 29.
820	Drawer-pulls	P. and E. W. and J. A. Blake.....	New Haven, Conn.....	Aug. 5.
831	Floor cloths (No. 1)	A. Glominski, assignor to D., A. E., and N. B. Powers.	Lansingburg, N. Y.....	Sept. 16.
832	Floor cloths (No. 2)	A. Glominski, assignor to D., A. E., and N. B. Powers.	Lansingburg, N. Y.....	Sept. 16.
859	Floor cloths	A. Glominski, assignor to D., A. E., and N. B. Powers.	Lansingburg, N. Y.....	Dec. 23.
769	Forks and spoons, handles of.....	Theodore Evans	New York, N. Y.....	Mar. 4.
757	Furnaces, portable.....	G. Smith, H. Brown, and J. A. Road, assignors to A. E. Warfield.	Philadelphia, Pa.....	Jan. 15; antedated Dec. 31, 1855.

Designs for 1856—Continued.

No.	Designs.	Patentees.	Residence.	Date of patent.
753	Furnace, summer.....	Jacob Bæseley, assignor to Cresson, Stuart & Peterson.	Philadelphia, Pa.....	1856. April 15.
759	Gates	Herman E. Wesche, assignor to Robert Wood.	Philadelphia, Pa.....	Feb. 5.
762	Gates.	Herman E. Wesche, assignor to Robert Wood.	Philadelphia, Pa.....	Feb. 12.
814	Grate, ornamental, for fire-places.....	John C. Macy	Cincinnati, Ohio.....	July 8.
855	Grates, parlor	John T. Davy.....	Troy, N. Y.....	Dec. 23.
796	Match sates, paper weights and pincushions combined.	Michael B. Dyott.....	Philadelphia, Pa.....	May 27.
792	Oven and stove doors.....	Joseph A. Read, assignor to John H. Cahill.	Philadelphia, Pa.....	May 13.
782	Oven, gas.....	Edward J. Delaney, assignor to Cresson, Stuart & Peterson.	Philadelphia, Pa.....	April 15.
815	Ovens, parlor.....	Russell Wheeler and Stephen A. Bailey ..	Utica, N. Y.....	July 8.
753	Pendants, hall.....	S. B. H. Vance, assignor to.....	New York, N. Y.....	Jan. 1.
754	Pendants or chandeliers, hall.....	Mitchell, Bailey & Co	Connecticut.....	Jan. 1.
780	Pen, steel.....	Samuel B. H. Vance, assignor to.....	New York, N. Y.....	Jan. 1.
788	Piano forte legs.....	Mitchell, Bailey & Co	Connecticut.....	April 15.
798	Piano forte legs.....	Albert Granger	New York, N. Y.....	May 13.
760	Printing type.....	Isaac Engel.....	Boston, Mass.....	May 27.
851	Printing types.....	Albert Rosworth, assignor to Albert Rosworth and Timothy H. Loomis.	Whitfield, Mass.....	Feb. 12.
758	Ranges, portable.....	L. Johnson	Philadelphia, Pa.....	Dec. 2.
797	Ranges, portable.....	George Bruce.....	New York, N. Y.....	Jan. 15; antedated Dec. 31, 1855.
847	Statuettes of Burton as Captain Cuttle.....	G. Smith, H. Brown, and J. A. Read, assignors to A. F. Warfield.	Philadelphia, Pa.....	May 27.
816	Stove, box, plate	James Horton and John Carrie, assignors to Cox, Hagar & Cox.	Philadelphia, Pa.....	Oct. 21.
765	Stove plates.....	Charles Müller.....	New York, N. Y.....	July 15.
		Winslow Ames.....	Nashua, N. H.....	Feb. 12.
		Sanford Burnam, assignor to Cox, Warren, Morrison, & Co.	Troy, N. Y	

774	Stove plates.....	Samuel H. Ransom.....	Albany, N. Y.....	April 1.
785	Stove plates.....	Harvey Smith and Frederick A. Sheldon.	Troy, N. Y.....	April 22.
821	Stove plates.....	N. S. Vedder, assignor to G. F. Filley.....	Troy, N. Y.....	Aug. 5.
842	Stove plates, cooking.....	N. S. Vedder, assignor to Mann, Torrance, & Co.	Troy, N. Y.....	Oct. 7.
793	Stoves.....	Samuel W. Gibbs, assignor to W. & J. Treadwell and Perry & Norton.	Albany, N. Y.....	May 20.
805	Stoves.....	G. Smith, H. Brown, and Joseph A. Read, assignors to A. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	June 17.
806	Stoves.....	Samuel W. Gibbs, assignor to Treadwell, Perry & Norton.	Albany, N. Y.....	June 17.
801	Stoves.....	Isaac Diller.....	Lancaster, Pa.....	June 17.
809	Stoves.....	Samuel F. Pratt, assignor to W. & J. Treadwell, Perry & Norton.	Boston, Mass.....	June 24.
810	Stoves.....	N. S. Vedder and William L. Sanderson, assignors to North, Chase & North.	Troy, N. Y.....	June 24.
808	Stoves.....	S. W. Gibbs, assignor to.....	Albany, N. Y.....	June 24.
830	Stoves.....	North, Chase & North.....	Philadelphia, Pa.....	Sept. 16.
840	Stoves.....	G. Smith, H. Brown, and J. A. Read, assignors to Cox, Hagar & Cox.	Philadelphia, Pa.....	Sept. 16.
839	Stoves.....	S. W. Gibbs, assignor to North, Chase & North.	New York, N. Y.....	Oct. 7.
844	Stoves.....	N. S. Vedder and William L. Sanderson, assignors to North, Chase & North.	Troy, N. Y.....	Oct. 7.
845	Stoves.....	G. Smith, H. Brown, and J. A. Read, assignors to Hayward, Bartlett & Co.	Philadelphia, Pa.....	Oct. 7.
848	Stoves.....	Hudson E. Bridge.....	St. Louis, Mo.....	Oct. 14.
803	Stoves, airtight.....	James J. Duley, assignor to Fuller, Warren & Morrison.	Troy, N. Y.....	Nov. 4.
836	Stoves, coal, cylindrical.....	Garretson Smith and Henry Brown, assignors to A. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	June 17.
756	Stoves, cooking.....	Russell Wheeler and Stephen A. Bailey.	Utica, N. Y.....	Oct. 7.
764	Stoves, cooking.....	G. Smith, H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	Jan. 15.
766	Stoves, cooking.....	Sam'l Pierce and J. J. Duley, assignors to Cox, Morrison, Warren & Co.	Troy, N. Y.....	Dec. 31, 1855.
775	Stoves, cooking.....	Sam'l. Pierce and Sandford Burnam, assignors to Cox, Warren, Morrison & Co.	Troy, N. Y.....	Feb. 12.
781	Stoves, cooking.....	Samuel H. Ransom.....	Albany, N. Y.....	Feb. 12.
		Samuel H. Ransom.....	Albany, N. Y.....	April 1.
			Albany, N. Y.....	April 15.

Antedated
Dec. 31, 1855.

Designs for 1856—Continued.

No.	Designs.	Patentees.	Residence.	Date of patent.
789	Stoves, cooking.....	Anthony J. Gallagher.....	Philadelphia, Pa.....	1856. May 13.
795	Stoves, cooking.....	Thomas A. Herriek, assignor to Lemuel M. Leonard.	East Bridgewater, Mass.....	
799	Stoves, cooking (A).....	William Resor.....	Cincinnati, Ohio.....	June 3.
800	Stoves, cooking (B).....	William Resor.....	Cincinnati, Ohio.....	June 3.
807	Stoves, cooking.....	John F. Allen, assignor to Stratton and Massey.	Philadelphia, Pa.....	June 17.
802	Stoves, cooking.....	G. Smith, H. Brown, and Jos. A. Read, assignors to A. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	June 17.
811	Stoves, cooking.....	Garretson Smith, Henry Brown, and Jos. A. Read, assignors to Leibrant, McDowell, & Co.	Philadelphia, Pa.....	June 24.
817	Stoves, cooking.....	Joseph Hackett.....	Louisville, Ky.....	July 29.
819	Stoves, cooking.....	Benj. Wardwell and Ephraim R. Barstow.	Fall River, Mass.....	July 29.
823	Stoves, cooking.....	Saml. Pierce and J. J. Dalloy, assignors to Fuller, Warren, and Morrison	Troy, N. Y.....	Aug. 5.
825	Stoves, cooking.....	N. S. Vedder and Ezra Ripley, assignors to Cox, Richardson, and Boynton.	Troy, N. Y.....	Aug. 19.
824	Stoves, cooking.....	N. S. Vedder, assignor to Cox, Richardson, and Boynton	Troy, N. Y.....	Aug. 19.
828	Stoves, cooking.....	N. S. Vedder and W. L. Sanderson, assignors to Sweetland and Little.	Troy, N. Y.....	Aug. 26.
829	Stoves, cooking.....	N. S. Vedder and W. L. Sanderson, assignors to Sweetland and Little.	Troy, N. Y.....	Aug. 26.
835	Stoves, cooking.....	Daniel Wilson.....	Nashua, N. H.....	Oct. 7.
843	Stoves, cooking.....	N. S. Vedder, assignor to Graff, Reisinger & Graff.	Troy, N. Y.....	Oct. 7.
837	Stoves, cooking.....	Hudson E. Bridge.....	St. Louis, Mo.....	Oct. 7.
852	Stoves, cooking.....	Samuel W. Gibbs, assignor to A. H. McArthur & Co.	Albany, N. Y.....	Dec. 9.
853	Stoves, cooking.....	S. W. Gibbs, assignor to G. W. Ball & Co.	Albany, N. Y.....	Dec. 23.
854	Stoves, cooking.....	Garretson Smith and H. Brown.....	Philadelphia, Pa.....	Dec. 23.
856	Stoves, cooking.....	John T. Davy.....	Troy, N. Y.....	Dec. 23.

776	Stoves, cooking, elevated oven.....	Samuel H. Ransom.....	Albany, N. Y.	April 1.
791	Stoves, cooking, for the plates of	W. L. Sanderson and N. S. Vedder, as- signors to Sanders, Wolfe, & Warren.	Troy, N. Y.	May 13.
837	Stoves, cooking, parlor.....	John T. Davy.....	Troy, N. Y.	Dec. 23.
846	Stoves, cook's.....	N. S. Vedder and W. L. Sanderson, as- signors to G. W. Eddy.	Troy, N. Y.	Oct. 21.
770	Stoves, elevated oven	Samuel W. Gibbs, assignor to W. & J. Treadwell, Perry & Norton.	Albany, N. Y.	Mar. 18.
850	Stoves, kitchen.....	S. W. Gibbs, assignor to Wood, Roberts & Co.	Albany, N. Y.	Nov. 25.
804	Stoves, nine-plate.....	G. Smith, H. Brown, and J. A. Read, as- signors to A. G. Abbott and A. Law- rence.	Philadelphia, Pa.....	June 17.
834	Stoves, oven	Samuel F. Pratt, assignor to Treadwell, Perry & Norton.	Boston, Mass.....	Sept. 23.
767	Stoves, parlor	William T. Coggeshall.....	Fall River, Mass.....	Feb. 19.
768	Stoves, parlor.....	Samuel D. Vose.....	Albany, N. Y.	Mar. 4.
772	Stoves, parlor	Samuel H. Ransom.....	Albany, N. Y.	April 1.
779	Stoves, parlor	N. S. Vedder and William L. Sanderson, assignors to Sanders, Wolfe, & Warren.	Troy, N. Y.	April 8.
790	Stoves, parlor	N. S. Vedder and William L. Sanderson, assignors to N. S. Vedder.	Troy, N. Y.	May 13.
794	Stoves, parlor	David Hathaway, assignor to Cox, Rich- ardson, & Boynton.	New York, N. Y.....	May 2.
822	Stoves, parlor	Samuel Pierce and J. J. Duley, assignors to Fuller, Warren & Morrison.	Troy, N. Y.	Aug. 5.
826	Stoves, parlor	David Hathaway, assignor to Cox, Rich- ardson, and Boynton.	Troy, N. Y.	Aug. 19.
833	Stoves, parlor	Samuel F. Pratt, assignor to Treadwell, Perry, & Norton.	Boston, Mass.....	Sept. 23.
841	Stoves, parlor	J. Beesley and E. J. Delaney, assignors to Cresson, Stuart, and Peterson.	Philadelphia, Pa.....	Oct. 7.
849	Stoves, parlor.....	Elihu Smith	Albany, N. Y.	Nov. 11.
773	Stoves, six-plate.....	Samuel H. Ransom.....	Albany, N. Y.	April 1.
827	Stoves, six-plate.....	N. S. Vedder and E. Ripley, assignors to Sweetland & Little.	Troy, N. Y.	Aug. 26.

DESCRIPTIONS AND CLAIMS OF PATENTS, ISSUED IN THE YEAR 1856.

ILLUSTRATED BY ENGRAVINGS.

[To find the Plates, see Index at the end of Vol. II.]

I.—AGRICULTURE.

No. 14,051.—GEORGE H. CLARKE.—*Improvement in Bee-Hives*.—Patented January 8, 1856.

The nature of this invention consists in the application of three or more open-sided hollow bars or tubes D, inserted in the bee-hive for the purpose of affording, at all times, a safe and easy mode of intercommunication between all the combs in the hive, and also for better supporting the combs.

The inventor says: Disclaiming the other devices, described individually or combined, what I *claim* is, the construction and arrangement of the hollow bars D, in the manner and for the purposes set forth.

No. 14,168.—H. G. ROBERTSON.—*Improvement in Bee-Hives*.—Patented January 29, 1856.

All the joints of this bee-hive have grooves Z formed in them to receive caustic lime, which is tightly packed therein. The object of this lime is to destroy the larvæ hatched from eggs laid in the joints, or which seek to enter the hive thereat.

The inventor says: I do not claim lime as a material for packing the joints of my hive, but merely indicate it as the most suitable for that purpose, among several materials offensive to insects which I know of that could be used with more or less advantage. I *claim* making the joints hollow, and stuffing them with caustic lime or other matter offensive to insects, in the manner and for the purpose specified.

No. 15,457.—J. S. BROWN, assignor to JOSEPH KENT.—*Improvement in Bee-Hives*.—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim —The peculiar construction of the drawer E, and its arrangement in combination with the basement D and the bottom M of the

hive, substantially as herein set forth, so as to be reversible in position, and to serve the several purposes of controllable ventilator, filth receptacle, with moth-trap and feeding chamber, in the manner specified.

No. 15,894.—CHARLES PAWLING.—*Improvement in Bee-Hives*.—Patented October 14, 1856.

The nature of this invention consists in providing the front part of the bee-palace with three boxes E F G placed in the front part of the palace, without having any connexion with the interior, for the reception of moths, the bees entering the palace through the openings H, and the moths through the openings F.

Claim—The arrangement of the bee entrances H H, with the moth entrances *fff*, and moth receptacles E F G P, when located as set forth and described, and for the purpose stated.

No. 15,436.—WASHINGTON F. PAGETT.—*Improvement in Machines for Binding Grain &c.*—Patented July 29, 1856.

In using this apparatus, the outer hook *b*, of band G, is attached to the forward end of the conductor D, which is driven forward by a pinion meshing in the racks B; the other end of the band G is hooked on to the way A, in front of the slide J, which is now withdrawn. The conductor D is now run under the sheaf and the hook removed from it, and attached to the end of the way A, as represented in dotted lines. The motion of the apparatus is now reversed, and the rack B slides the ring *a* off the end of the way A, when it grapples the other hook; the sheaf is thus compressed and securely bound, and the band disengaged from the machine.

Claim.—The way A, in combination with the slide J, or its equivalent, when operating in the manner and for the purposes described.

2d. I claim the band G, in combination with the way A and slide J, for the purposes described.

No. 14,530.—JAMES H. BENNETT.—*Improved Butter-Worker*.—Patented March 25, 1856.

The bowl B is rotated, and the spatula I is placed against the bar H, which latter is fitted to the frame A, directly over the centre of the bowl. The butter will thus be spread out in a thin sheet around the sides of the bowl.

Claim.—The rotating bowl B, in combination with the horizontal bar H and spatula J, when arranged and operated for the purpose herein specified.

No. 15,350.—HIRAM TARBOX, 2d.—*Improved Cattle Stall*.—Patented July 15, 1856.

The nature of this invention consists in having an excrement apron B, attached and supported by means of cords *b* and *d* behind the animal, said cords running over friction rollers. When it is desired to remove the excrements, the cord *d* is raised, and thus the apron C is caused to assume a vertical position.

Claim.—Having attached or supported an apron or its equivalent, whereby the excrement is prevented from dirtying the animal, and also protecting litter or bed.

No. 14,309.—JOHN U. FIESTER.—*Improvement in Churns*.—Patented February 26, 1856.

The agitator J is composed of three pieces, two of which are hung on a pin to the center-piece. As the agitator revolves, the cams *b*, acted upon by the eccentric circular recess *e*, cause the two pieces of the agitator to swing laterally, so as to alternately check and allow the flow of the current of the cream through holes *a*, in each of the three pieces of the agitator, which holes are in one line (so as to allow the cream to flow through) only in one position of the pieces during each of the lateral vibrations.

Claim.—The cams *b* and eccentric circle *e*, in combination with the agitator J, for the purpose of breaking or cutting the current of cream in its passage through them, and for producing friction by the lateral motion of the two sides of the agitator, as herein described, and for the purposes set forth.

No. 14,458.—LUCIUS LEAVENWORTH.—*Improvement in Churns*.—Patented March 18, 1856.

By moving the lever G with a reciprocating motion, the cords attached to the arc of the lever will alternately wind and unwind on the pulley F, causing it to revolve in the direction of the lever, thus causing the cords E E to move the staff B with a reciprocating motion, and, by having cords wound on the staff, imparting to it, as they alternately wind and unwind, a rotary motion.

Claim.—The arrangement of the cords or bands attached to the pulley, and also to the staff, being wound on the staff to give a required rotary motion, as described in the specification.

No. 14,677.—WILLIAM NEWBROUGH.—*Improvement in Churns*.—Patented April 15, 1856.

The diagonal separator B is formed with openings *a*, and rests on the bearings *c*¹; obliquely under the box A, are secured the rockers *d* *d*. The churn is rocked by means of shaft *f* and the elastic handle H,

whereby a violent agitation of the cream through the separator is produced.

Claim.—The combination of the oblique-bulged rockers with the diagonal separator, for producing a violent agitation of the cream.

No. 15,412.—WILLIAM H. BURNHAM and B. HIBBARD.—*Improvement in Churns.*—Patented July 29, 1856.

The nature of this improvement consists in the peculiar construction of the churn-dasher, which is composed of two independent frames: one consisting of the slats *d* and connecting side slats *e*; the other of the slats *e* and *f*; all attached to the shaft *b*, and arranged as represented in the engraving.

Claim.—The improved churn-dasher, composed of two independent frames, combined with each other and with the operating lever, substantially in the manner set forth.

No. 15,661.—LOOMIS LAMB.—*Improvement in Churns.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim employing in a tub two concentric shafts separately, provided with one or more dashers to revolve with them. But I *claim* applying the auxiliary dasher *E* to the shaft of the rotary dasher *D*, without any other shaft, so that the shaft of the rotary dasher may revolve on the hub of the auxiliary dasher, in combination with applying to the inside surface of the tub a stop or projection *G*, or equivalent means, arranged as described, and by which the auxiliary dasher may be stopped from revolving with the other dasher, when both are placed in the cistern, and the churn is in operation, as described.

No. 15,741.—ALBERT PEASE.—*Improvement in Churns.*—Patented September 16, 1855.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of the two fixed boards *c* and *b* on the dasher handle, and a sliding board *d*, or its equivalent, moving between them, substantially as described; disclaiming the use of two fixed boards, except in the combination herein specified.

No. 15,787.—FRANKLIN THORPE.—*Improvement in Churns.*—Patented September 23, 1856.

When it is desired to churn, the crank *g* being turned to the right, the action of the scalloped buckets *K* squirts or projects the milk

forcibly against the head of the tub in the direction of the arrow. This action constantly breaks the vertical motion, and produces a series of rapid concussions of the liquid against the ends of the tub, which result in a speedy formation of butter. This being accomplished, a backward rotation instantly brings the loose bucket in line with the other, as represented in fig. 3, so as to present two rounded edges adapted for gathering the butter by rolling it against the sides, bottom, and top of the tub.

Claim.—The described arrangement and combination of the fast and loose buckets—the latter being slackened from the former in the act of opening, and tightening to it in the act of closing, by the screw upon the spindle, or equivalent devices, for the purposes explained.

No. 16,203.—WILLIAM A. VERTREES.—*Improvement in Churns.*—Patented December 9, 1856.

The air tube T extends from near the top of churn A nearly to the bottom, where it is bent into a horizontal position. The lower end of the tube is provided with a double-acting valve V; the outward wing of which presses against the fluid, while the other end extends inward and closes one side of the tube to prevent the cream from entering the tube, while the valve is open to let the air pass behind the valve, as the shaft S is revolved back and forward.

Claim.—The air tube with its double-acting valve, arranged in the manner and for the purposes set forth.

No. 16,193.—CHARLES A. SHAW.—*Improvement in Churns.*—Patented December 9, 1856.

As the swinging frame D, to which the churn A is attached, is caused to vibrate on its fulcrum *a* by applying power to the handle L, the toothed sector K causes to oscillate pinion I and shaft H. By this arrangement, a rising and descending motion is imparted to pitman F, gate D, and dasher E; during which motion the dasher E is oscillated as the screw-thread *f* on its periphery I plays in the corresponding screw nut *h*.

The inventor says: I do not claim combining with the dasher and pendulous frame a mechanism by which and the pendulous frame, the dasher will have a rotary motion on its axis when the pendulous frame is put in motion.

Nor do I claim, separate from the same, combining with the dasher and the pendulous frame a mechanism by which and the pendulous frame such dasher will have imparted to it upward and downward motions when the pendulous frame is set in motion.

I *claim* combining with the pendulous frame, and the mechanism connected therewith, for imparting to the dasher up and down motions, a mechanism which, at the same time, will rotate the dasher on its axis—the dasher thus having at one and the same time a compound

movement, consisting of one in line of its axis, and one of rotation on its axis, whereby the operation of churning is greatly improved and facilitated.

No. 16,210.—GOODRICH LIGHTFOOT.—*Improvement in Churns*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The adjustable floats or buckets *b c*, attached to the annular plate *H*, which is secured to the shaft *B*; the above parts being arranged, as shown, for the purpose specified.

No. 15,743.—EDWIN A. PALMER.—*Improved Clevis*.—Patented September 16, 1856.

By putting the pin *B*, with the arms *E*, down through the openings *F* in the projection *L*, and turning it one-fourth round, the spring *A* will press the pin and arms back into the recesses *I*; the spring will keep the arms in these places and prevent the pin from turning, and thus obviate the friction. This arrangement avoids the use of a screw on the pin, or a key to keep the pin in its place.

The inventor says: I do not claim any part of the common clevis; but I *claim* the pin provided with a spring, and arms *E E*, in combination with the projection in the head, and openings through which the arms may pass, and the recesses *I I*, arranged substantially as and for the purposes set forth.

No. 14,816.—MATHEW S. KAHLE.—*Improvement in Machines for Saving Clover Seed*.—Patented May 6, 1856.

The rake *D* catches the heads of clover as the machine moves forward, and the revolving blades *C C C C* cut them off. The cloth *E E* carries the clover heads up, and empties them between the rubber *H* and the seive *I I*, where they are broken by the projecting spikes on rubber *H*.

The seed and light pod are prevented from falling between the rubber *M* and fans *S* by the shelving board *U*, and pass down between the rubber *M* and the concave board *V V*. Here they are again rubbed, and pass out at *W*, where the wind of the fan-wheel blows away the chaff, and the seed falls through the seive *x x* into the drawer *y y*.

Claim.—In combination with a gathering and conveying apparatus, such as described, the rubber and meshed wire concave *I I*, for separating and throwing out the grass, leaves, weeds, and other impurities, from the heads, pods, &c., and passing the latter to the threshing cylinder, and concave, and blast, and screen underneath them.

No. 14,596.—GEORGE E. BURT.—*Improved Machine for Combing Seed off Broom-Corn.*—Patented April 8, 1856.

Having laid the substance to be combed upon the belts E E E E, motion is communicated to them by the pulley S. The pinion M, on crank-shaft R, gives motion to the wheel B, which imparts motion to the cylinder C by means of gear N, shaft O, pulley P, and belt e e. The broom-corn, being forced upon the teeth of the wheel by the rolls G G, is brought under the bar D, which beats it down parallel with the plane of the wheel, and brings it in contact with the comb cylinder C C; thus stripping the seed entirely off without injury to the fibre, and delivering it by the fingers J J and spur roll K in an even and regular manner. The plate L serves to clear the corn from the roll by means of its projections, which enter the grooves c c c c in the roll.

The inventor says: I do not claim setting teeth spirally on cylinders; neither do I claim an endless bearded belt constructed of any proper material, having lugs or spikes, in combination with comb rollers, set diagonally upon a frame, as employed by Lorenzo D. Grosvenor, patented September 23, 1851 but I *claim* the combination of the wheel B, or its equivalent, (such as a rim or circle,) having one or more rows of teeth in its periphery, with one or more cylinders C placed parallel, or nearly so, with the plane of the wheel B. I also *claim* the bar D, arranged in the manner and for the purposes set forth. I also *claim* the spur roller R, in combination with the plate L, substantially as described.

No. 14,374.—JEREMIAH P. SMITH.—*Improvement in Corn-Shellers.*—Patented March 4, 1856.

The teeth b b of the breast-beam D project into the grooves c c c of the cylinder A, so that the cobs may not get around the ends of said teeth, and thereby be broken. The corn is thrown into the hopper B, and an elastic bar C is employed to keep the ears close to the shelling cylinder.

Claim.—Grooving the shelling cylinder around its periphery, and extending the teeth of the breast-beam therein, in combination with the arrangement for adjusting said breast-beam to different degrees of inclination to suit the different condition of corn to be shelled, substantially in the manner and for the purposes herein set forth.

No. 14,745.—A. H. STEVENS.—*Improvement in Corn-Shellers.*—Patented April 22, 1856.

The disk B, when in operation, rotates in the direction of the arrow, and the fans d create a blast which, by the peculiar shape of said fans, is crowded into the corners r, and escapes through the air passages y. This current is caught immediately by another system of fans Z, which give it a tangential direction to the circumference of the disk, forcing it upwards against the cap L, and downwards through the open space h and the apertures g, (in K,) which are sufficiently narrow not to

permit any grains to pass through them. The heavier corn, being detached from the cobs by means of the teeth *a* on the shelling surfaces B and C, falls through the aperture N in the bottom O of the box A, while the chaff and dust are driven out through the passage M.

Claim.—In combination with the shelling surfaces, the wings Z, openings *y*, and spiral flanges or ribs *d*, for the purpose of creating and driving through the machine a blast or current of air for separating the grain from the other impurities.

No. 14,771.—EBENEZER MATHERS.—*Improvement in Corn-Shellers.*—Patented April 29, 1866.

The object of the tongues D D is to keep the ears of corn pressed out against the teeth C of the cylinder A, as they descend in the channels *k k*, but yielding sufficiently to allow the passage of the cob after the corn is shelled off.

Claim.—The construction of the shaft B, with the channels *k k*, said channels being furnished with elastic tongues D D, for the purpose above specified.

No. 14,990.—CHARLES S. C. CRANE, assignor to SAMUEL M. TINKMAN.—*Improvement in Corn-Shellers.*—Patented May 27, 1856.

The ears of corn pass from the vibrating board Q down the chute O, between bars R R and shelling-wheel C, the springs *d d* pressing the ears against the teeth *a* of the wheel, thereby shelling the corn from the cobs. The plates *e e* prevent more than one ear from being shelled at once at each side of the wheel.

Claim.—The shelling-wheel C, toothed or corrugated on both sides, the pressure bars R R provided with plates *e* on their upper ends, and the feeding device, composed of the uprights *b b* and board Q. The above parts being arranged and operating conjointly, as shown, for the purpose specified.

No. 15,105.—EBENEZER MORRISON.—*Improvement in Corn-Shellers.*—Patented June 10, 1856.

The ears of corn Z are fed into the machine through tube E. As it strikes the feed cones R R, a rotary motion is imparted to the ear of corn by the revolving of the feed-cones and rows of teeth thereon; the angle of the ear being such as to cause the ears of corn to be fed downward just fast enough to allow the shelling-wheel Y to remove all the corn from the cob, and then allow the cob to pass out of the machine at the outlet E².

Claim.—The arrangement of the two-toothed truncated feed-cones R R for both revolving and feeding down the ears of corn in such manner that the toothed shelling-wheel Y will remove all the corn from the cob during such revolving.

No. 15,502.—CALVIN ADAMS.—*Corn-Shellers*.—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

Claim.—Alternating the annular rows of rotating teeth *b* of the shelling cylinder with stationary toothed rings *c*, when the said shelling cylinder is combined with a rack composed of a series of self-adjusting toothed segments *h*, substantially in the manner herein set forth.

No. 15,765.—JAMES JONES JOHNSTON.—*Improvement in Corn-Shellers*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—I claim the drum D, with the two sets of teeth, arranged as described, and its combination with the vertical guide-boards E F and spring-plates G H, substantially as set forth, and for the purpose described.

No. 15,920.—WILLIAM BLACK.—*Improvement in Corn-Shellers*.—Patented October 21, 1856.

In shelling corn with this apparatus, the operator pushes the ears by hand into the holes *g* in such a manner that the teeth A will enter between the rows of the corn-cob, and by turning the ears, the corn is separated from the cob.

Claim.—Two or more holes *g*, of different sizes, with teeth A, converging in the manner shown, or any equivalent manner, for the purpose set forth.

No. 16,191.—HAMILTON E. SMITH.—*Improvement in Corn-Shellers*.—Patented December 9, 1856.

The corn is fed from the hopper J, in between the shelling cylinder D and the concave G, and as the cylinder is rotated the corn is shelled by the action of said cylinder on the concave. The concave G rests by means of the four pins *g* on the springs I, which can be adjusted by the set-screws F, and thus the concave is permitted to yield during the operation of the machine.

Claim —The combination of the cylinder D and concave G, when made and operating together, substantially in the manner described.

No. 16,291, EDGAR M. STEVENS.—*Improvement in Corn-Shellers*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The self-adjusting cylinder *f*, in combination with the presser-bar *i* and bed *k*, when all are arranged as set forth, and for the purpose specified.

No. 16,127.—JEREMIAH P. SMITH.—*Improved Disk for Shelling Corn.*—Patented November 25, 1856.

The corn-cobs pass from the hopper *E* into the space between the plates *H* and the vertical shelling-disk *B*, and are shelled by the rotation of said disk on its shaft *D*. The plates *H* are attached to a rod *I*, which is pivoted loosely at *L*, and pressed towards the disk by means of spring *g*. The plates *H* can be further adjusted by means of bolt *F*, which passes through slot *d*, and is connected with the supporting arm *M*.

Claim.—The annular concave shelling surface *N*, on the face of the shelling disk, when employed in combination with the other parts of the machine, substantially in the manner and for the purpose described.

No. 16,177.—WILLIAM B. COATES.—*Improvement in Machines for Cutting the Stalks of Standing Corn.*—Patented December 9, 1856.

As the machine is drawn over the ground, the stalks of one row of corn are caused to pass into the opening between the projections *S* and *T*, and a rapid reciprocating motion will be imparted to the knife *L*, by means of the cog-wheel *G* on the driving shaft, pinion *H*, wheel *I*, pinion *J*, crank *k*, and connecting rod *h*; and as the knife is hung to an oblique pin, its movement must have a corresponding obliquity. By means of the adjustable connecting rod *h*, the motion of the knife *L* is so regulated that its cutting-edge may, when at the lowest point of its movement, be in very close contact with the inner edge of the projection *S*, so as readily to divide the stalks by an oblique cut.

Claim.—The oblique knife *L*, in combination with the connecting rod *h*, universal joint *g*, and crank *h*, said rod being made adjustable, for the purpose specified and in the manner set forth, or any equivalent to the same.

No. 15,746.—BENJAMIN G. SHIELDS.—*Improvement in Cotton-Pickers.*—Patented September 16, 1856.

The cotton is gathered by the teeth of the chain *C* running over two pulleys *a* and *b*, through two separate tubes *A*, as the crank *E* is rotated; and as the locks of cotton approach on the chain, the arms of the blower *G* knock it off by a blow from behind, and the blast facilitates and completes the delivery.

Claim.—As an improvement on the patent of George A. Howe, of the 4th December, 1855, the application of a fan or fans to the gathering chain, as a means of removing the gathered cotton from said chain; and this I claim whether said fans be used as set forth, or in any other way substantially the same.

No. 15,606.—HERVY D. GANSE.—*Improved Cultivator*.—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—So constructing and arranging my cultivator, by means of the clevis *x*, the beams *M*, and brace *n*, substantially as described, that, in combination with the seat *W*, the plows may be guided by the feet of the driver, in the manner set forth.

No. 14,715.—GEORGE ESTERLY.—*Improvement in Cultivators*.—Patented April 22, 1856.

The object of this invention is to provide a machine capable of cultivating corn, cotton, and other row-planted crops, through all their stages, from the time they spring through the soil and are thinned till they have obtained such growth as to do without further assistance.

Claim.—The hanging of two or more ploughs to a supporting beam or axle *H*, by swivelling joints at each of the ends of their drag bars *G G*, so that said ploughs may be moved either way laterally, without affecting the axle, and still maintain their parallelism; and this I *claim* whether the stock to which the ploughs are connected be adjustable in the drag-bars, or the ploughs be adjustable in the stock, or otherwise.

No. 15,453.—JACOB ZIMMERMAN.—*Improvement in Cultivators*.—Patented July 29, 1856.

The cutters *c* cut up the weeds and stalks as they are severed by the cutters *C*, and also serve to loosen the ground between the rows. The rake *R* collects the rubbish; and when a sufficient quantity has accumulated, support *s* is drawn up, and the shaft *S* allowed to revolve; as the arms *a* pass through the comb *D*, all adhering rubbish is removed thereby.

Claim.—The revolving rake and cleaner, in combination with the series of elastic cutters *c* and flat cutters *C*, as set forth.

No. 14,254.—CHARLES H. SAYRE and GEORGE KLINCK.—*Improvement in Cultivator Teeth*.—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—So constructing a cultivator tooth that, when made of thin or sheet metal, a part thereof shall form a tubular, shank *B*, whereby said tooth may be drawn up and securely attached to the frame, substantially as described.

No. 15,210.—ABRAHAM FRAVEL, assignor to Himself and THOMAS D. LEMON.—*Improvement in Grain Drills*.—Patented June 24, 1856.

The grain passes from hopper *A* to the shoes *C*, which latter receive a perpendicular motion by means of the tumblers *M*. The grain passes

then from shoes C, through guards D and spouts 'E, into the teeth F, with cutters F¹. The teeth F are attached to lever G, which latter extends back to form box H for the reception of weights, to give the tooth the necessary depth in sod or hard ground.

Claim.—The combination of tooth F, cutter F¹, and lever G, with shoe C, guard D, and tumbler M.

No. 14,708.—WARREN S. BARTLE.—*Improved Machine for Sowing Fertilizers.*—Patented April 22, 1856.

The fender *u* is let down, as seen in fig. 1, for the purpose of preventing the too rapid flow of the finely pulverized fertilizers. The operation will be understood from the engravings.

Claim.—The distributors composed of the radials *r r r*, in combination with the shaft *k k¹ k¹* and fender *u*, constructed and arranged substantially as described.

No. 15,976.—REUBEN M. HINE.—*Improvement in the Handles of Agricultural Forks, Shovels, and Hoes.*—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says :

I do not claim any mode of fastening the handle to the piercing or cutting part of a fork, shovel, or hoe.

Neither do I claim any mode of constructing the head-piece, or of attaching it to the handle ; and I disclaim making the handle of any implement whatever of metal, or of an unfilled metallic tube.

But I *claim* making the handle of an agricultural fork, shovel, hoe, or equivalent implement, of a metallic tube filled with wood, as described, whereby the advantage specified is secured.

No. 15,151.—GARRETT J. OLENDORF.—*Improvement in Revolving Harrows.*—Patented June 17, 1856.

The nature of this invention consists of a cylinder C, secured on a shaft which is connected to the driving wheels by gearing, the ratchet wheels E being secured on the cylinder shaft at each end, and serving to prevent the cylinder C from binding, and also to make either of the driving wheels A act independently. The cylinder revolves several times faster than its natural speed would be rolling over the ground, and thereby harrowing the land well.

The inventor says : I do not claim to be the inventor of inverted gear, pinions, ratchet-wheels, or a cylinder constructed with a series of spikes on its surface ; for I am aware these have long been in common use. But I *claim* the construction and combination of the several parts of my revolving harrow, the whole being arranged as described and set forth for the purpose specified.

No. 14,149.—JOHN H. MANNY.—*Improvement in Harvester Cutter-Bars.*—
Patented January 22, 1856.

This improvement consists in making finger-bars of steel which possesses such strength that a finger-bar sufficiently strong to resist all tendency towards bending or twisting it would yet not be so high or so wide as to obstruct the delivery of the cut grass or grain on the stubble behind the bar; whereas these disadvantages would result from the necessary increase in height and width if the bar were made of iron instead of steel.

Claim.—The tempered steel finger-bar A, by which the delivery of the cut grain or grass upon the stubble is facilitated, and other advantages attained, as herein described.

No. 14,768.—WILLIAM H. HOVEY.—*Improvement in Attaching Harvester Cutter-Blades to the Sickle-Bar.*—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Attaching the teeth B to the sickle-bar A, by means of the grooved pins *a*, and bar C attached to the bar A, and the plate D having holes *d* and slots *e* made through it.

No. 14,402.—ISRAEL S. LOVE.—*Improvement in Cutters for Harvesters.*—
Patented March 11, 1856.

This invention consists in making a double set of teeth X and Y, to be attached to the sickle-bar, whereby the close proximity of the bar and consequent pressure on all the guard-fingers J J is avoided, having always a space between them and the under side of the cutter-bar, which otherwise will often clog up.

The inventor says: I do not claim the cutting-blades in their usual form, nor do I claim the other parts as they have hitherto been used; neither do I claim the tooth X (which may be made either in one piece or more) when used without the tooth Y; but I *claim* the use of the clearing tooth Y, in connexion with the cutting-tooth X, in the manner and for the purpose as set forth, provided the cutters be distinct and the spaces between them continue back to the rear of the cutter-bar.

No. 14,422.—PLINY THAYER.—*Improvement in Harvester-Cutters.*—
Patented March 11, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—In combination with the plates *e*, being loosely on the fingers or guards, but kept from moving by the projections *f f* on the plates, and the open countersinks on the guards, the cutters *d*, which are vibrated past those *e*, and held to them by the guides and springs L M, substantially as described.

No. 14,453 —HORACE L. HERVEY.—*Improvement in Harvester-Cutters.*—Patented March 18, 1856.

The nature of this invention will be understood from the engravings and the claim.

Claim.—Furnishing the cutter-bar C with a series of inclined blades or knives A, in combination with the inclined blocks E and rollers *d*, or their equivalents, for giving to said cutters or cutter-bar an oblique cut.

No. 14,544.—JOHN H. MANNY, assignor to PETER H. WATSON.—*Improvement in Harvester-Cutters.*—Patented March 25, 1856.

The nature of this invention consists in constructing a sickle with two edges *b b* in such a manner that either of them may be used. C are cleaning hooks secured to the stock *a*; *d d* are holes to connect with the connecting rod by which the sickle is vibrated.

Claim.—The reversible duplex sickle, substantially as herein described.

No. 14,777.—BENJAMIN T. RONEY.—*Improvement in Harvester-Cutters.*—Patented April 29, 1856.

A reciprocating motion is imparted to the bars C and D by connecting a rod actuated by a crank on any moving part of the machine to the projection *f*; this reciprocating motion of the connected bars imparts to the cutter-levers E a vibrating motion, so that the knives *h h* and projecting cutters *d d* move across each other in contrary directions.

The inventor says: I am aware that vibrating knives or cutters for harvesters are well known and in common use, and that such cutters have been arranged so as to produce what is known as the shear cut. I therefore do not claim the use of vibrating cutters exclusively, but as an improvement upon the ordinary manner of arranging the same. But I *claim* the slotted bar C and cutter bar D, as connected together by the cross-pieces *e e*, in combination with the cutter-levers E, their knives *h*, and projecting pins *i*; the whole being arranged in conjunction with the fulcrum-bar A, substantially in the manner as shown.

No. 14,790.—JOHN REILY.—*Improvement in Harvester-Fingers.*—Patented April 29, 1856.

The inventor says: I am aware that steel plates have heretofore been inserted into the upper side of the fingers, to act as stationary cutters, but to those I lay no claim, as they are at once costly and liable to get out of order; but I *claim* hardening that part of the tooth on which the knife works.

No. 15,013.—HENRY F. MANN.—*Improvement in Harvester Frames.*—Patented June 3, 1856.

The inventor says: I am aware that harvester frames have been inclined downward in front of the supporting and driving wheel, and where the cutter-bar was also in front of the said wheel. This not only makes the tongue connexion awkward, but, the whole weight being forward of the wheel, throws the machine out of proper balance. But in the machine above referred to, there is no inclination of the pinion shaft, which I deem a material point in the construction of the frame. Such form of frame I lay no claim to; but I *claim* inclining the rear portions of the side-pieces B C so that the shaft *b* may lie upon and have the same dip with the one C on which it is supported, for the double purpose of giving said shaft a firm support, and to bring its drive-wheel J close down to the pinion on the crank-shaft.

No. 15,701.—WILLIAM P. MAXSON.—*Improved Grain and Grass Harvester.*—Patented September 9, 1856.

In this apparatus the sickle E can be raised and lowered by operating the lever G; and the wheel H can be thrown in and out of gear with pinion *c* by operating the lever U, the wheel H being attached to driving wheel F.

Claim.—The wheel H, attached to the driving wheel F, in combination with the curved sliding lever G (on which the driving wheel is hung) and straight lever U, when arranged to operate in the manner and for the purposes set forth.

No. 14,350.—OWEN DORSEY.—*Improvement in Harvester Rakes.*—Patented March 4, 1856.

As the rake-head passes over the platform A, its movement is horizontal, the arm C passing over the rail from *m* to *h* (fig. 1); but on reaching the edge of the platform the rake-head is suddenly raised by the arm passing up the incline *m* (fig. 3) of the guide rail, while the rake and opposite end of the arm drops at a corresponding incline; and by continuing its movement the rake reaches over the heads of the grain, and, gradually descending by the guide rail, draws the wheat towards the cutters.

Claim.—The combination with the rake-arms *c c*, to which the rakes are firmly attached, of the vertical revolving shaft *i* and cam-way or guide *ff*, *m m*, from which the rake-arms receive an undulating motion in a vertical plane revolving about said shaft *i*, substantially in the manner and for the purposes set forth.

No. 14,043.—GEORGE A. CLARKE, assignor to WILLIAM CLARKE.—*Improvement in Harvester Raking Apparatus.*—Patented January 1, 1856.

As the grain is cut by the sickle it falls over on the platform X, and the rake M is moved back and forth by the endless belt Q, which is

operated by the belt a^1 . When the rake M reaches the end of its backward stroke, the teeth are elevated in consequence of the pin o striking against the projection p , and the rake, in moving towards the driving end of the sickle, carries the grain off the platform. Just before the rake M reaches the end of the platform, the rod j^1 catches against the end of the arm T and moves it outward, and consequently throws the rod y backward so that the grain will fall upon the ground; and as the rake returns, the rod j^1 will draw upon the catch U, and force outward the rods y to their original position, so that the rods will catch the grain that is cut opposite to them, and retain it till the rake again arrives at the end of the platform X.

Claim.—Operating the rake M by means of the endless belt Q, in combination with the levers R W connected with the rods y , as shown, for the purpose of raking the cut grain from the platform X.

No. 14,693.—WILLIAM H. HOVEY.—*Improvement in Harvester Raking Attachments.*—Patented April 15, 1856.

As the machine is drawn along, the rake D^1 is moved back to the outer end of the platform C, in consequence of the teeth w gearing into the pinion on the pulley O, the teeth of the rake D^1 being kept in a horizontal position by means of the weighted arm G. When the rake D^1 reaches the outer end of the platform, the teeth are elevated above the slats d by an incline z , and kept in an elevated position by the catch-bar H, which fits over a projection on the end of the head E^1 . The teeth w , on the wheel P, leave the lower pinion v at this point, while the teeth y , of the inner periphery of wheel P, gear into the pinion v , and the rake D^1 is moved from the outer to the inner end of the platform C^1 , whereby the cut grain is raked up against the teeth k and underneath the teeth j of the rake I. At this position of the rake D^1 the catch i acts upon the catch M, throwing it free from the lower end of the lever L; and as the rake returns, the catch i will draw back the lower end of lever L, by means of pin r , and the rake I will be turned, the teeth j throwing the cut grain from the platform; the rake returning to its original position as soon as the pin r is freed from the catch i by means of the weight O.

The inventor says: I am aware that a reciprocating rake D^1 , working through a slotted platform, has been previously used, and I therefore do not claim said rake separately.

But I *claim* the swinging rake I, in combination with the reciprocating rake D^1 , when said rakes are used in combination with the device for operating the rake I, formed as shown, viz: of the catch M, lever L, with pin p , attached to arms k o , and the catch-bar H attached to the rake D^1 , whereby the proper movements are given at the desired time to the rake I.

2d. I *claim* operating the reciprocating rake D^1 by means of the chains M N attached to said rake, as shown, and passing around pulleys t u u , and attached to the pulleys o o , which pulleys are turned or operated alternately by the wheel P, having teeth w y upon its outer and inner peripheries.

No. 14,026.—JOHN H. MANNY.—*Improvement in Harvesters.*—Patented January 1, 1856.

The front end of the rear section (A) of the tongue projects across the hinge C over the rear end of the front section B, and the projecting end of the rear section is fitted with an adjusting screw *a*, which passes through it and extends toward a plate, *b*, on the rear end of the front section. By turning, to make its point project more or less, the front section of the tongue will be allowed to rise a less or greater distance from the ground without lifting the forward end of the rear section, as the joint C can only be turned downward until the lower end of the adjusting screw *a* comes in contact with the plate *b*.

Claim.—The tongue with an adjustable joint, constructed and operating substantially in the manner herein set forth

No. 14,046.—LEBBEUS BARNES.—*Improvement in Harvesters.*—Patented January 8, 1856.

A spring *f* is attached direct to the cutter-bar by means of a rod *e*, for the purpose of neutralizing the deadness of action accompanying the reciprocating motion of the cutter-bar, and also for weakening the jerk of said motion. The spring *f* is attached to the frame at the point *g*, and is shown in its two extreme positions drawn in full and in dotted lines.

Claim.—The application to the reciprocating cutter-bar of a mowing machine or reaper of a spring or springs driven by or operating in connexion with the cutter, essentially as specified.

No. 14,079.—JOHN REILY, assignor to Himself, TALBOT C. DOUSMAN and JOHN HEATH—*Improvement in Harvesters.*—Patented January 8, 1856.

When the driver desires to raise the front of the machine he presses his foot upon the spring *d*, which detaches the pin *c* from ratchet wheel D on shaft *o*; this leaves the lever wheel D free to be rotated by his hand. Wheel D is mounted on the same shaft *o*, and also a small pinion, which latter (being rotated together with D and gearing into the rack F) will raise the rack F on the end of lever E; as this lever is raised it carries up with it the rod *f* attached to the cutter-bar B, in this way raising the front and depressing the rear of the machine.

To the inside of the cutter-bar is hinged the front end of the platform G, the rear end being supported by standard G¹. This standard plays up and down through a mortise in crossbeam A³, as the platform rises and falls by the inequalities of the ground.

The grain guard I is provided with two arms *i*, so as to project it towards the platform G, in a line parallel with the frame in the same manner as a parallel ruler. This grain guard is projected more or less towards the platform by means of a proper hand lever, for the purpose of enabling the raker to straighten the grain with facility as it is brought

in contact with it in depositing it upon the ground, whether the grain be long or short.

Claim.—1st. The method of raising and lowering the cutter-bar, substantially as described.

2d. The arrangement and combination of a raker's seat with a swinging platform, as described; and,

3d. The adjustable grain-guard or straightening-board I, for the purposes described.

No. 14,205.—B. F. RAY.—*Improvement in Harvesters.*—Patented February 5, 1856.

The guard plate serves to exclude all matter which would tend to obstruct the mechanism enclosed in the wheel. In order that the machine may be conveyed to different points without giving motion to the cutting apparatus, and to prevent the bell crank from becoming bent for want of proper support, the sliding bar M is slotted, which permits the bell crank to remain stationary until secured by pin *t*.

Claim.—1st. Providing the main or driving wheel of reaping and mowing machines with a stationary guard plate R, in the manner and for the purpose herein described.

2d. The sliding bar M arranged in the same horizontal plane with and perpendicular to the axle of the driving wheel of reaping and mowing machines, in combination with the bell crank F, for the purpose of giving direct and positive motion to the cutting apparatus when arranged obliquely to the line of draught, substantially as described.

3d. Forming in the sliding bar a slot for the reception and operation of the bell crank as herein set forth.

No. 15,146.—J. C. PLUCHE and L. C. PLUCHE.—*Improvement in Harvesters.*—Patented June 17, 1856.

With this improvement either end of the sickle may be raised or lowered: for instance, if the outer end is raised, the sickle and finger bar will cause the shaft *k* to turn between the two strips *b b*; and if the inner end is raised, the strips *b b* will raise the plates *f f* and frame C, the upper ends of the plates *f* being properly guided in consequence of the roller *g* working in the guide F. The sickle may be raised by the driver at any time, in order that it may pass over obstructions, by depressing lever M. The weighted lever I causes the sickle to descend and keeps it at the surface of the ground.

Claim.—The frame C, when arranged in respect to the driving shaft D, and having the bar E attached to its lower end, and the strips *f* attached to the bar E; the upper ends of the strips *f* having a roller, *g*, attached to them, which roller is fitted and works in a guide F, the finger bar G being connected to a shaft *k* fitted within the bar E, when the whole is constructed and arranged substantially as shown for the purpose specified.

No. 15,204.—CYRIL B. WAGNER.—*Improvement in Harvesters.* Patented June 24, 1856.

This harvester is so constructed that should the main wheel D drop into a hole, the rear wheel Q will still keep up the rear of the machine, whilst the frame A will merely oscillate on its bearings C, rolling the pinion F upon the gears *b*; and the tongue E not being influenced by the dropping of the front of the frame, no effect is produced upon the horses.

Claim.—In combination with the main supporting and driving wheel D, and the main frame A, and its supporting wheel Q, the tongue frame B, so united that the motion of one shall not injuriously affect the action of others.

No. 15,236.—JOHN C. HEUERMAN.—*Improvement in Harvesters.*—Patented July 1, 1856.

The machine being drawn along, the angular projections *a* acting on the rollers *m* will, on account of the position of the two sets of projections *a a'* to each other, cause the opposite levers H and H' to vibrate in contrary directions, imparting through the rods I and I' a vibratory motion to the levers J and its arms K K', and a corresponding reciprocating motion to the bar E with its cutters *f*.

The inventors say: We wish it to be understood that we do not claim exclusively the employment of cams or projections on the driving wheel in combination with levers for agitating the cutters of harvesters; but we *claim* the wheel C, with its projection in combination with the levers H and H', and their scrapers *j'*, the rods I and I', lever J and arms K, the whole being arranged and constructed substantially in the manner herein set forth for the double purpose of clearing the projections from dirt and agitating the cutters.

No. 15,377.—STEPHEN R. HUNTER.—*Improvement in Harvesters*—Patented July 22, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

The inventor says: I do not claim the rotary cutters working within or through the slotted fingers *c*, separately or in themselves considered, for they have been previously used; but I *claim* the employment or use of the rotating cutters formed of circular plates L, with teeth *e'*, at their peripheries; said teeth working through or between slotted fingers *c*, on the plates J, J, when said plates are connected by a hinge or joint *b*, and attached to the frame A, as shown and described for the purpose set forth.

No. 15,582.—WILLIAM TINKER.—*Improvement in Harvesters.*—Patented August 19, 1856.

As the machine is drawn along, the shaft C and wiper wheel F are rotated by the gearing D E, and the wiper wheel, as it rotates, gives a

reciprocating motion to the frame G, rod H, and sickle bar I. The sickle bar has cutters *d* attached to it. The front part of the cutters are of the usual saw-tooth form, the back end of the cutters extend back of the cutter bar, and are merely short projections *e*, with parallel cutting edges which prevent the sickle from being choked by grain or grass collecting between the sickle and finger bar, as the projections *e* cut it immediately and keep the sickle free at all times.

The inventor says: I do not claim, irrespective of the relative arrangement of their cutting edges to the finger bar, and their action, as specified, the reciprocating back cutting projections over or through the fingers between the finger bar and sickle. And I am also aware that a sickle has been provided with back scraping projections, presenting parallel sides or edges, and moving crosswise to the traverse of the machine on or over the plain surface of the sickle bar. Such, therefore, I do not claim. But I *claim* forming the cutting teeth *d*, with narrow back projections *e*, having cutting edges parallel to each other along the sides of each projection, so as to cut at right angles to the face of the finger bar, when said projections are arranged for operation over the fingers between the finger bar and sickle, as specified, in combination with the wiper wheel driving appliance for giving an abrupt action to said cutters for the better clearance from grain or grass of the space which separates the finger bar and sickle, as set forth.

No. 15,638.—HOMER ADKINS.—*Improvement in Harvesters*.—Patented September 2, 1856.

This invention relates to the attachment of a rake to a harvester. The harvester itself may be of any of the well known constructions; Motion being imparted to the pulley M from the driving shaft, the crank N on the shaft of said pulley is rotated, and a reciprocating motion is imparted to the bar O, and the rake P is drawn over the platform B, and rakes the cut grain off. The guide blocks Q and S assist in giving the proper movement to the bar O.

Claim.—The rake operated by means of the crank N, and guide blocks Q S, substantially as described for the purpose specified.

No. 15,721.—WILLIAM H. SEYMOUR and HENRY PEASE, assignors to WILLIAM H. SEYMOUR and DAYTON S. MORGAN.—*Improvement in Harvesters*.—Patented September 9, 1856.

This invention relates to the peculiar construction of harvester frames, by which said harvester can readily be converted from a mowing to a reaping machine, and *vice versa*. Figure 1 represents the arrangement when the machine is used as a reaper. The driving wheel G is to be placed upon shaft G, when the cogged wheel H will come into gear with pinion I and drive the raking and cutting apparatus. The tongue L is held rigid by the insertion of pin *c* into a hole in the standards *b*. In converting said machine into a mower, the block F¹ is removed into the position marked by letter E, the bolts of said block passing through

the holes *f*, and when the driving-wheel is set on its shaft, the arrangement will assume the position represented in fig. 2; the front part of the mower is then supported by means of the wheel M, attached to a frame by a bolt *h* passing through hole *g*, and the tongue L is permitted to play by the withdrawal of the bolt *c*.

Claim.—In combination with the main wheel H, and removable wheel M, a frame capable of allowing the shifting of the former, and the removing or replacing of the latter, when the machine is to be converted from a reaper to a mower, or *vice versa*, substantially as set forth.

No. 15,722.—WILLIAM H. SEYMOUR and HENRY PEASE, assignors to WILLIAM H. SEYMOUR and DAYTON S. MORGAN.—*Improvement in Harvesters.*—Patented September 9, 1856.

Motion being imparted to the machine by the driving wheel F, upon shaft E, the cogged wheel I causes to revolve the pinion H, and the latter transferring motion to pinion *c* rotates shaft *d*, and operates the cutting apparatus by means of crank *e* and pitman K. The pinion J imparts revolving motion to shaft *b* K *l*, and to pinion *g*; and as the latter revolves, it meshes into the teeth of the circular rack N, and runs through the entire length of said rack carrying along the platform Q, which swings on the pin *t*, together with the bearing *w* of the rake *z* and rack *p* and pinion *y*. In the position as represented in fig. 2 of the illustration, the rake and platform Q are progressing towards the front edge of the platform of the harvester. When the pinion *g* has arrived at the front end of the rack N, it is caused to descend to the lower side of said rack, and by thus descending the rack *p* operates the pinion *y*, and turns the rake shaft *x* and rake *z* from a horizontal into a vertical position, the rake commencing its rearward motion and raking the grain off the platform. The driver sitting on the seat M, fig. 1, can, by the pressure of the foot upon the lever *g*, operate the clutch-arms *g* in such a manner as to connect or disengage the shaft *b* from the shaft K, and can thus either stop the motion of the rake altogether, or regulate its motion so that the gavels on the platform can all be formed of the same size.

Claim.—The particular arrangement of the clutch and clutch lever, with regard to the conductor's seat and platform, and the shaft *b*, from which motion is communicated to both the rake and sickle, as that the operator from his seat, having a distinct view of the platform, can engage or disengage said rake with his foot, whilst the sickle continues to run, substantially as set forth.

Also, the combination of the universal joint *i*, for connecting the shafts *b* *k*, the sleeve *l*, and plate Q with its guide *m m*, and gimbal joint *o*, for giving the rake its transverse movement, as described.

Also, the bow and rake head, so formed as to incline towards their outer ends, and so acting as to cause the bent or entangled straws to slide off on to the platform, substantially as described.

No. 15,735.—WILLIAM GAGE.—*Improvement in Harvesters.*—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I *claim* raising and lowering the finger-bar and cutters by means of swinging the outside frame, to which the finger-bar is attached, upon two pivots upon the inside frame, and holding the same where placed by means of the serrated plates E E and tightening rod *d d*, when said frames are constructed and arranged to operate in relation to each other, and the driving wheel, finger-bar, and cutters, in the manner and for the purposes set forth.

I do not claim a board set edgewise and upon an angle inward, when the same is not combined with the wheel W, and used for mowing, whether fixed immovably to finger-bar or hung upon a hinge.

Neither do I claim a mould board or a dividing board, when combined with, and fixed on, a platform and used for reaping.

But I *claim* the peculiarly adjustable mould board *z y*, in combination with the wheel W, and its supporting arm, *x y*, when used in mowing, for the purpose of protecting the wheel and arm from loose grass, and prevent its lodgment thereon, when the above parts are constructed and arranged in the manner described.

No. 15,855.—ISRAEL S. LOVE.—*Improvement in Harvesters.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The use of the movable rolling guides E, placed between the cutting blades D and the sill A of the harvester, whether they be used with a sill made entirely of metal, or partly of wood, with more or less metal attached to the same.

No. 15,843.—WILLIAM DRIPPS.—*Improvement in Harvesters.*—Patented October 7, 1856.

The cutters *b* are set into the links E of an endless chain in such a manner that they can play freely in their bearings; as the wheels D are rotated they impart motion to the chain and to cutters *b*, and when the cutters arrive to the front side of the machine they are caused to revolve as the pinions *c* come in contact with the rack G, thus assuming a travelling and revolving motion while they operate upon the fingers C.

Claim.—Giving to the cutters of a harvesting machine a travelling and a rotating motion, at the same time and by means substantially such as described.

No. 15,882.—CARLOS W. GLOVER.—*Improvement in Harvesters*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Attaching the finger bar E to the guide box B, which is fitted over the flanch *b*¹ of the driving wheel A, as shown; the guide box having the two shafts C D attached to it, by which motion is communicated to the sickle from the driving wheel, and the bar F, attached to the finger bar by hinges or joints *k*, and the guide box B, to the rod H; the whole being arranged, as shown, for the purpose set forth

No. 15,927.—PILLSBURY MANNY.—*Improvement in Harvesters*.—Patented October 21, 1856.

A straining bar E is attached underneath the frame A. The screw *e* passes through the centre of the axle D, so as to bear upon the bar E, in such a manner that, upon suitably adjusting the screw *e*, the bar E is depressed at its centre, by which means the finger bar *a* may be kept perfectly horizontal.

Claim.—The straining stirrup or brace bar E, arranged diagonally beneath the frame, and fitted so as to secure the ready and effectual adjustment of the frame or finger-bar portion thereof, as described.

No. 16,079.—ALVIN BULLOCK.—*Improvement in Harvesters*.—Patented November 11, 1856.

As the machine is drawn along, the zig-zag flanch D will operate the lever J, giving it a vertical vibratory motion, and the bent lever G will also be vibrated, imparting a reciprocating motion to the cutter bar H.

Claim.—Operating the sickle bar H by means of the right angle lever G on the shaft E in combination with the lever T, bar *c*, and flanch D, when the same are constructed and arranged to operate in relation to the main frame A, drive wheel B, and adjustable finger-bar 1, in the manner and for the purpose set forth.

No. 16,194.—WILLIAM TINKER.—*Improvement in Harvesters*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I do not claim driving or operating the sickle F by means of the bent lever D and the scolloped rim *a* and ring *b* on the driving wheel; for this or equivalent devices have been previously used.

But I *claim* the employment of the freely turning support *d*, arranged and operating substantially as described, in combination with the bent lever D and scolloped driving wheel C, for the purpose of securing said lever from strain, and at the same time of retaining the utmost facility and freedom of motion thereof in the manner specified.

No. 14,553.—SAMUEL COMFORT, jr.—*Improved Apparatus for Removing Grain from Harvesters.*—Patented April 1, 1856.

The radial grating is formed of the rods *e e e e*, which are secured to the curved bar *E*. The bar *S*, with its projecting rods *v v v v*, constitutes the grated platform.

To the bar *S* is secured the guide *T*, the lower legs of which slide in a bracket *U*, the upper leg being guided in a sleeve *W*.

Claim.—1st. The employment in harvesters of the grated platform and radial grating, the same being constructed and operating in conjunction with each other as described.

2d. The radial grating with its two rollers *a* and *a'*, shaft *F*, and arm *G*, as connected to the shaft *H* in combination with the curved plate *D* and its curved recess *d*, (the said shaft *H* being acutated in the manner set forth or any equivalent to the same,) for the purpose of turning over the said radial grating and clearing it of the grain or grass.

3d. The arm *G*, with its projection *R*, recess *r*, and jointed inclined plane *Q* in combination with the shaft *P*, its cranked portions *t* and *p*, and roller *h*, for the purpose of giving the grated platform the desired vertical movement.

No. 14,769.—SALEM T. LAMB.—*Improvement in Automatic Rake for Harvesters.*—Patented April 29, 1856.

The rake moves along the platform longitudinally, carrying the grain ahead of it, and, when the rake reaches the point *o*, a projection *n* on the rake strikes against a friction roll *O* and holds the rear of the rake, while the front part of the rake turns upon its pivot *i* and coils up the spring *J*. Just as the hook *l* runs out from under the ledge *N* at *m*, *j* strikes against a roll *p* and causes said cam to turn on the shaft *K* and raise up the rake vertically; the spring *J* uncoils and returns the rake to the original position with regard to the arm *L*. As the cam *J* rolls on the shaft by striking against *p*, a pin *g* thereon passes under the ledge behind *C* and holds the cam, rake and all, in the raised up position, until the cam traverses back and meets a stop roll *P*, which turns it back around the shaft *K*, whereby the pin *g* is drawn out from under the ledge *N*, and the rake is let down gently by the intervention of the cam ledge *Q*, which receives the pin *g*.

The cam *J* receives its motion by means of the pitman *I*, the arm *H* attached to the turning stud *F*, and the short arm *g*, which has a friction roll *h* on its end—said roll passing between the cam rings *E*, whereby a variable turning motion of the stud *F* is caused.

Claim—Giving the rake *M* its circular motion by means of the traversing and rocking cam *J*, in connexion with the revolving cam *E*, which gives the longitudinal motion, through the intervention of the devices substantially such as described.

No. 16,307.—SAMUEL COMFORT, jr., assignor to EDWARD S. RENWICK.—*Improvement in Automatic Rakes for Harvesters*.—Patented December 23, 1856.

As the machine is drawn along, the pinion N is rotated; this pinion is attached to shaft M, which turns in the stationary bearings *m*. The pinion N, in position, as represented in figure 3, in revolving, causes the endless rack I to move in the direction of the arrow, and at the same time the entire raker frame, composed of parts L, P, T, S, R, moves in the same direction, towards the rear end of the harvester platform, the rake U V being in the position as shown in figure 2. When the pinion N comes in contact with the end *i*¹ of the rack I the latter is raised, together with frame L and rod P, and rake U V is thrown in the position of figure 1 by the action of rod P upon link *q* and lever R; as the pinion N revolves further, the rack I and extended rake move towards the front end of the platform. As soon as the pinion begins to act upon the teeth *i* of the rack, the rake U V returns to position figure 2, sweeping off the grain and compressing it against plate H, and the gavel thus formed is carried to the rear of the machine by the backward movement of rack I, and dropped as soon as the rake returns to position figure 1.

Claim.—1st. The combination of the rake handle, the guide which its upper end traverses, and the lever to vibrate the rake in and out, when arranged for joint operation, substantially as set forth.

2d. The counter loading of the rake for the purpose of rendering the draft of the machine more equable, substantially as set forth.

3d. The combination of the rake with the mechanism for moving the same to and fro over the platform with a traversing carriage, substantially as set forth.

4th. The method of discharging the gavel before being bound by dropping it from between the rake teeth V and the plate H, while the machine is in motion, as if it were standing still, by neutralizing the forward motion derived by the gavel from the machine by its backward motion derived from the rake, substantially as set forth.

5th. The combination of the rack and pinion, or the equivalent thereof, with the rake, substantially as set forth, whereby the motions are generated for traversing the rake, first along the platform to gather the grain into a gavel, and then across the platform, to discharge the gavel.

No. 15,449.—C. B. WHEELER and AUSTIN BASCOM.—*Improvement in Clover-seed Harvesters*.—Patented July 29, 1856.

When this apparatus is drawn along, the clover heads pass between the stationary teeth *b* and the reel F, which is hung in an adjustable frame E, strikes against the clover heads, which are cut off, and are thrown within the body A, an endless apron H, conveying them to the rear part of the body.

Claim.—The reel F and cutters or teeth *b*, placed within the sliding or adjustable frame E, in combination with the endless apron H, the parts being arranged as shown, for the purpose set forth.

No. 14,076.—GEORGE W. N. YOST.—*Improvement in Corn Harvesters* — Patented January 8, 1856.

As the machine is moved forward, the driving wheel communicates revolving motion to the knife B, and by means of the rods G, which are allowed to run on or near the ground, and may be adjusted by cords *a*, all stalks of corn which lie across the track are gathered between the said rods and caused to come in contact with the knife inside of finger board *d*. As the corn is cut off it is taken by the man standing on platform E and set back against the frame F; and when sufficient is set up to form a shock, the tops are bound and the frame opened at *h*, and the lever *c* is moved, which allows the platform to fall and the shock is left standing already secured.

Claim.—The combination of the adjustable lifters G G, finger board *d*, revolving sickle-shaped knives B, vertical adjustable frame F, and the adjustable platform D, for the purpose of harvesting corn, when all are operated and operating as described and herein set forth.

No. 14,34.—WILLIAM M. BONWILL.—*Improvement in Corn Harvesters*. 4 Patented March 4, 1856.

As the machine is drawn along, the saws J J are rotated by means of the gearing as shown, and the saws cut the stalks, each saw being in line with a row. The cut stalks fall upon the plates K K, and when a sufficient quantity is upon the beds, the rods *b b* are depressed by the driver, and the lower ends of the rods *c c* are thrown outwards thereby, and the stalks are thrown upon the ground.

The inventor says: I do not claim the circular saws for cutting the stalks, for they have been previously used; but I *claim* the two saws J J placed at the front part and at each side of the platform A, in combination with the horizontal plates or beds K K, and discharging rods *c c*, arranged substantially as herein shown and described for the purpose specified.

No. 14,730.—R. C. MAUCK and W. T. MCGAHEY.—*Improvement in Corn Harvesters*.—Patented April 22, 1856.

Figure 1 represents one half of the plan view of the machine, and figure 2 a section of the same. The harvester is driven forward so that one of the stalk receivers *f* will embrace each stalk of a row as it comes in contact with the said stalks. As the stalk is cut by the cutter *a*, the vibrating frame *k* throws it upon the inclined guide *n*, across the machine, whence it falls within the action of the arms *p*, which convey it under the packing guides *q*; as these guides pass close to the bottom of the body, the stalks accumulate under them and cause the rear stalks to be forced backward until the body is filled. Simultaneously with the cutting of the stalks by the cutter *a*, the cutters *b* sever the stumps from the ground and permit the passage of the machine.

Claim.—1st. The rotary arms *p*, in combination with the packing guides *q*, for affecting the filling of the body.

2d. The employment of a double series of cutters for cutting the stalks and stump, and thereby admitting of the delivery of the cut product without elevation.

No. 15,152.—WILLIAM S. TILTON.—*Improvement in Corn Harvesters.*—Patented June 17, 1856.

As the implement is drawn along, the two cutters G G are rotated by the chain H, and the standing stalks will be encompassed and drawn towards the knife J by the cutters G G, the stalks being cut between the cutters and knife. The frame E may be raised or lowered by loosening the screws *a* so that the cutters and knife may be placed the desired height from the ground.

Claim.—The rotating cutters G G and stationary knife J, placed within an adjustable frame E, arranged as shown for the purpose specified.

No. 15,533.—ANDREW SPRAGUE.—*Improvement in Corn Harvesters.*—Patented August 12, 1856.

Motion is imparted from the driving wheels N by means of gearing to the wheels D, attached to trunions E; the rod B passes through the side pieces of a frame C, which are provided at their rear ends with pivots *a*, which are made to slide in a horizontal groove *b*. The stalks or stems of grain pass between the knives A, and when the knives A arrive at the position marked in dotted lines, they bring the grain so near the thin edged guard K as to deliver it on said guard, whence it falls into the elevators L.

The inventor says: I do not claim the tongue steering wheel, or the drive wheels and elevators. But I *claim* the guard K, in combination with the knives A, operated in the manner and for the purposes set forth.

No. 15,409.—JOHN W. BATSON.—*Improvement in the Cutting Apparatus of Corn and Cane Harvesters.*—Patented July 29, 1856.

The nature of this invention consists in the peculiar construction of the cutting apparatus of corn and cane harvesters, by which the blades D, when set obliquely into a frame E, and held there tightly by the projections *b* and bar F, may cut the corn or cane by being drawn through the stalks, said knives being stationary and not movable, as in grain harvesters.

Claim.—The double-angled V-shaped cutters, composed of strips and under supports, substantially as represented and for the purposes set forth.

I also claim hanging said cutters to a pivoted bar, so that they may be raised up out of cutting position when the machine is drawn through the stubble, to prevent their catching against the previously cut cane or corn, as set forth.

No. 15,408.—JOHN W. BATSON.—*Improvement in the Raking Apparatus of Corn and Cane Harvesters.*—Patented July 29, 1856.

The corn or cane when cut falls on the endless belts $L L^1$ on the platform A, which are set in motion from the driving wheel B by the arrangement as represented in the illustration. The corn or cane is caught by the rake teeth d and conveyed up the shield M, over the pulley K^1 , to the inclined shield M^1 , where it is discharged into a wagon fastened along side the machine.

Claim.—In combination with the endless rake belts $L L^1$, passing under and over the platform, and thence over the pulleys $K K^1$, the shield M placed between them, when said shield receives the corn or cane from the rakes at their highest elevation, and conveys it into a wagon or other receptacle alongside, substantially as set forth.

No. 14,761.—MILTON BARLOW.—*Improvement in Cradling Harvesters.*—Patented April 29, 1856.

The nature of this improvement in harvesting machines consists in so arranging the mechanism controlling the revolving cradles that by an eccentric I (secured to an upright journal E, on which the cradle arms revolve) the attendant is enabled to operate on the cradles by means of a yoke or ring K on said eccentric, through the agency of connecting rods $m m$ attached to the heel of the cradles, for the purpose of controlling the movement of the cradles, giving a drawing cut to the blades thereof. A further improvement is in delivering the grain gathered in the inside of the cradle fingers by a fixed rake q placed on the journal E, by which the cut grain is removed therefrom, and after being received on the rake teeth, by a partial revolution of said rake the grain is suffered to drop in suitable bundles for binding.

Claim.—Constructing and operating the cutting portion of the machine so that, by the use of the eccentric I, or a cam or crank as a substitute therefor, operating on the cradle, when in combination with the means of delivering the cut grain by the use of a rake, operated substantially in the manner and for the purposes set forth.

No. 15,205.—CYRIL B. WAGNER.—*Improved Cutting Apparatus for Harvesters.*—Patented June 24, 1856.

The sickle bar G, which rests upon the shoulders H H on each side of the oil reservoir b , is in contact with the sponge E, and thus constantly lubricates the places it slides over. Any moisture that would otherwise accumulate under the sickle is allowed to drip off into the channel C, and thence out of the openings $a a$.

The inventor says: I would state that I do not singly claim forming the finger or guard of a harvesting machine, with the hollow or depression C a ; but I *claim* forming the finger or guard A, having said depression C, with an additional depression as at b , and so uniting the sickle and sickle bar G thereto as to facilitate and render easy the cutting.

No. 15,677.—C. WHEELER, jr.—*Improved Cutting Device for Harvesters.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—Attaching the fingers C to the finger-bar B, and the cap D to the fingers as shown, and having a plate E placed on each finger, on which plates the teeth F of the sickle rest and work; the whole being arranged as herein described for the purpose set forth.

No. 16,134.—JOSEPH A. MOORE and ASAHEL H. PATCH.—*Improved Finger-Bar arrangement for Harvesters.*—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—On folded sheet metal finger bars the combination and arrangement substantially as shown and described of the folded sheet metal bar A, with fingers B, when the latter are inserted through holes in the front and rounded folded portion of the bar, and gripped and pinched between and by the lips of the bar in the rear and secured essentially as specified.

No. 14,250.—JOB PHILLIPS.—*Improvement in Grain Harvesters.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The self-adjusting platform *a* hinged at front at *a*¹, and so governed in its motions at the rear by the short arm *d*¹ of the regulating slide lever *d*, or equivalent thereof, as to maintain a fixed distance of the rear part from the ground, while the front part is raised or lowered by the adjusting lever *e*¹, as set forth.

No. 14,556.—AUGUSTUS ELLIOTT.—*Improvement in Grain Harvesters.*—Patented April 1, 1856.

The machine is constructed in two similar compartments A and B, hinged together for the purpose of enabling it to accommodate itself to the transverse inequalities of the land. The bundling apparatus is shown on compartment B. The teeth upon the gatherer *w*¹ are so placed, with reference to the bundling apparatus, as to pass over the spring platform *v*¹, and rake the grain therefrom on to the lower band *o*¹ *p*¹ at the same moment that the teeth upon the wheel *i* engage with the spur wheel *u*¹, which gives motion to the rollers *o*¹ *p*¹ *s*¹ *t*¹ *q*¹ *r*¹, &c., and endless bands, during about one third of a revolution, which is sufficient to convey the grain (which has been accumulating on the platform during a whole revolution) through the compressing apparatus, and project the bundle about one half of its length out of the end

of the apparatus, where it stops during the remaining two thirds of the revolution, giving time to the boys to bind it.

Claim.—1st. Forming the cut grain into sheaves or bundles by means of a series of endless bands and rollers, having an intermittent motion as described.

2d. The spring apron *s*, constructed substantially as described and for the purposes specified.

No. 14,102.—WILLIAM F. KETCHUM.—*Improvement in Grain and Grass Harvesters.*—Patented January 15, 1856.

The bar D has a sufficient degree of elasticity to allow the cutter-bar to rise and pass over obstructions when cutting grass. When the implement is used for cutting grain, the cutter-bar and platform is supported in a firm and rigid state by the additional support of the bar G.

Claim.—Supporting the cutter-bar E and platform H, when the implement is used as a grain harvester, by the bar or rod G, in addition to the bar D, said bar or rod being arranged or attached to the cutter-bar E and frame A, as shown and described, for the purpose set forth.

No. 14,127.—GELSTON SANFORD, THOMAS HULL, and STEPHEN HULL.—*Improvement in Grain and Grass Harvesters.*—Patented January 15, 1856.

When the bearings *b* of the driving wheel are in the position represented by full lines, the sickle and platform will be near the surface of the ground, because the axis D of the driving wheel B will be at the furthest point from the frame A; but if the bearings *b* be turned in the eyes C, by moving the bars E around, (see dotted lines,) the axis D will be brought nearest to the frame A, and the frame and sickle, &c., will be elevated.

Claim.—Placing or hanging the axis D of the driving-wheel B in circular bearings *b b*, which are allowed to turn in eyes or straps C C, attached to the frame A, the axis being placed eccentrically or out of centre in the bearings *b*, substantially as shown, and for the purpose specified.

No. 14,148.—JOHN H. MANNY.—*Improvement in Grain and Grass Harvesters.*—Patented January 22, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. In connexion with a dividing piece L, for throwing the grain inwards from the extreme ends of the cutters or platform, a recess or space *s*¹, into which a portion of the grain may afterwards drop, and be cut, for the purpose of obviating the tendency to choke or clog at the ends of the cutters, substantially as described.

Also, the intermediate piece P, between the tongue and the cutter-

beam, for the purpose of providing a yielding or elastic joint, not only at or about the line of the cutters, but also at the heel of the tongue, substantially as described.

Also, in combination with the lever U, having its fulcrum pivoted immediately between the tongue and the frame of the machine, the strap V, and hinged supporting piece S, for the purpose of regulating the height of the cutters, substantially as described.

No. 14,212.—ABNER WHITELEY.—*Improvement in Grain and Grass Harvesters.*—Patented February 5, 1856.

The nature of this improvement will be understood from two positions of the machine, represented in the engravings.

The inventor says: I do not claim oscillating the finger bar about an axis within itself, irrespective of the relations between the main frame and the master-wheel shaft. But I do *claim* so constructing the machine (as above described or otherwise, the result being substantially the same) that the driver is enabled, while the team is in motion, the master-wheel shaft being rigidly connected with the main frame, to change the angle of the fingers and cutters, without moving the finger-bar from the ground.

No. 14,266.—GEORGE W. N. YOST.—*Improvement in Grain and Grass Harvesters.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I do not claim springs for holding the cutter bar against the upper portion of the finger, as in the patent of Sylvester Colburn; but what I do *claim* is combining with the cutter bar *a* of harvesters a series of friction rollers *e e*, which said rollers are kept constantly pressed down on the cutter bar by means of springs *b¹ b¹*, for the purpose and substantially as set forth.

No. 14,409.—B. T. RONEY.—*Improvement in Grain and Grass Harvesters.*—Patented March 11, 1856.

This invention relates to that class of mowing and reaping machines in which the cutters are situated in advance of the horses, and consists in constructing a machine with two distinct frames, separate from but dependent upon each other. One frame is the permanent or gear frame A A¹ A², B B¹, C C¹ C² C³, E F, to which are attached the supporting wheels, the driving wheel L, and the gearing for producing the motion to be transferred to the second part of the machine, which the inventor calls the movable or cutter frame T T¹ U V W. The motion for operating the cutters is communicated by a chain from a pulley on the gear frame to a pulley on the cutter frame. These two frames are so adapted to each other that the cutter frame may be elevated or lowered and oscillate on the gear frame, allowing the cutters to

operate on level or uneven ground without disturbing the tightness of the driving chain.

As the rollers *y* rise over the ground and raise the cutter frame, the points of the lugs *t* on the bar *W* will bear against the tops *u* of the gear frame, and have a tendency to project the whole of the cutter frame slightly forward ; thus the chain will be maintained tight around the surfaces of both pulleys.

The inventor says : I do not claim exclusively double cutters operating simultaneously, nor the use of vibrating cutters, nor belts for carrying off the grain to one side of the machine ; but I *claim* the gear frame, with its lugs *u u*, in combination with the movable or cutter frame, its bar *W*, lugs *t t*, and bevelled projections *V V*, the whole being arranged and constructed substantially in the manner and for the purposes set forth.

No. 14,428.—ABNER WHITELEY.—*Improvement in Grain and Grass Harvesters*.—Patented March 11, 1856.

From the front edge of the cutter bar *K* forward, the shoe *C* is about half as wide as in the rear, permitting the end of the cutter to play out of and return into the divider in the groove. *B* is another form of the shoe, having its front point terminate at the point of the blade which cuts against it, and having no top, but is cut against in the same manner as the side fingers *5 5*.

The points of the fingers terminate near the blades, in order to permit the blades when vibrated to cut off any grass that gets on them.

Claim.—1st. The narrow divider *C*, as described, and for the purposes set forth.

2d. I claim making the divider with that portion forming the under or upper side of the slot removed, as the case may be, as set forth.

3d. I claim terminating the shoe *B* at or near the point of the blade which cuts against it, to prevent it carrying grass.

4th. I claim extending the tops of the guards over the edges of the lower portions, as described, for the purposes set forth.

5th. I claim the double cap *6 6*, as described, *i. e.*, the caps of two guards in one piece, having one shank for attaching it to the finger piece ; but I do not claim one cap, with two shanks for attachment.

6th. I claim attaching the shanks of the guard caps to the finger piece, as described, for the purpose of preventing straws or blades being carried beyond them to cause clogging.

7th. I claim terminating the points of the finger or fingers at or near the points of the blades, for the purpose set forth.

8th. I claim making one side and also one edge of the cutter bar, or either of them, a rasp or rough surface, as described, and as set forth.

No. 14,441.—THOMAS D. BURRALL.—*Improvement in Grain and Grass Harvesters*.—Patented March 18, 1856.

A pointed shoe *o* is attached at the end of the finger board *m* to separate the cut grass from the uncut grass ; and beneath this is a movable

shoe *v*, jointed at its forward end to the shoe *o*; and at the back end a rack piece 14 is jointed to the shoe *v*, passing up at the back of the finger board, and having a slot through it, and a screw 15 passing through the finger board, by means of which the finger board can be raised or lowered to cut at the required height.

K is a face gear wheel on the sides of the driving wheel *a*, communicating motion to a pinion *i*, on the horizontal or line shaft *f*. 5 is a journal near the forward end of said shaft, and is fitted loosely to said shaft to allow the pinion *i* to be thrown in and out of gear by means of a lever *g*, jointed by a fulcrum pin to the frame *b* at 24.

Claim.—The inventor says: I am well aware that single gearing has been used in a variety of forms; therefore I do not claim any such arrangement in itself: but I am not aware that any arrangement of single gearing has ever before been constructed in the manner herein described and shown, wherein by the use of a shaft with a bend arm on the end the line shaft *f* can be carried close to the main driving wheel, and the pinion *i* be so far removed from the fixed journal 5 that the same can be thrown in or out of gear with ease, and at the same time a small pinion and feet motion can be used, which could not be accomplished without the use of the bent arm 2 to the shaft 1, in the manner set forth. Therefore what I desire to secure by letters patent is:

1st. The shoe piece *v* and rack 14 to adjust the height of the outer end of the finger board, substantially as specified.

2d. I claim the arrangement of the shaft *f*, in the journal 5, with its pinion *i*, taking the wheel *K* when combined with the bent arm 2, in the manner and for the purposes specified.

No. 14,448.—ELIAKIM B. FORBUSH.—*Improvement in Grain and Grass Harvesters.*—Patented March 18, 1856.

E represents the adjustable shoe that connects the finger-bar *F* and cutters to the frame. It is made in three parts. The upper or bonnet part *c*, the shoe *c e*, and the compressing part *c e c*. The two arms *s z* and *t r* form the segments of circles whose centres are in the joints *L n*.

Claim.—1st. I claim as my invention the adjustable shoe *E*, for the purpose of levelling the platform, constructed and arranged substantially as herein described.

2d. I claim suspending the pole *P*, to which the team is attached, from a ringed journal *a b* upon the axle of the driving wheel, in order that the draft of the team when moving forward may be directly from the axle of the driving wheel, (leaving the frame *H*, finger-bar *F*, and cutters free to oscillate and independent of the pole and the draft of the team,) and also, when backing, the power of the team may be exerted upon the frame in rear of and below the axle of the driving wheel, substantially as herein described.

No. 14,541.—ABNER WHITELEY.—*Improvement in Grain and Grass Harvesters*.—Patented March 25, 1856.

The finger-piece T is braced by means of the rod U, to prevent its sagging.

I do not claim the segmental plates D D, separately as used to change the height of cut, in relation to the frame B B, or their use when attached to the main frame for the purpose of rendering the cut adjustable in height; but what I do *claim* is forming a joint at *a*, by means of the plates D D, plates E E, and the lugs as described, of sufficient strength to support the ground wheel A, and retain the driving cog wheel in gear while running, without any other connexion with the main frame C C.

2d. I *claim* placing the driver's seat Q on the opposite end of the frame B B¹, from the joint at *a* in such a manner that the driver's weight when seated on it shall balance some portion of the frame-work, &c., of the machine, and throw the weights thus made to balance each other on to the wheel A, while the angle of the cutters and fingers is preserved.

3d. I *claim* bracing the finger-piece T, so as to make it self-supporting, as described, and for the purposes set forth.

No. 14,582.—GEORGE W. N. YOST.—*Improvement in Grain and Grass Harvesters*.—Patented April 1, 1856.

To the cutter-bar *a* are fastened two projecting racks *b b*, the teeth of which gear with the teeth *e c* on the rim *d* of the caster. The racks *b¹ b¹* on the rim *d*, gear with the teeth *c¹ c¹*. The racks are placed together and secured by the king bolt *k*.

When the cutter-bar is to be raised or lowered, the king bolt is removed and the teeth of the rack are set at the required height.

Claim.—"The combination of the racks *b b b¹ b¹* and king bolt *k*, arranged as set forth for adjusting the cutter-bar of harvesters."

No. 14,661.—WILLIAM H. HOVEY.—*Improvement in Grain and Grass Harvesters*.—Patented April 15, 1856.

The lips or projections *m k*, at the front ends of the finger and sickle bars form a close joint and prevent the grass from working underneath the sickle, and the lower end of the lip *k*, resting upon the ledges *l* on the fingers, causes the sickle to work with little friction, the sickle and cutter-bars not being in contact.

Claim.—Providing the front ends of the cutter and sickle bars with lips or projections *m k*; the lip or projection *k* bearing upon ledges *l* on the fingers, substantially as shown and for the purpose specified.

No. 14,694.—WILLIAM A. KIRBY.—*Improvement in Grain and Grass Harvesters*.—Patented April 15, 1856.

The nature of this invention will be understood from the claims and engravings.

The inventor says: I am aware that an angle-iron as a bar for the support of the fingers is not new; but I *claim* the manner of attaching the fingers F as constructed with semicircular reapers *x x*, whereby they are secured to the angle-iron finger-bar by bolts without reducing the strength of the bar *d* of the finger I, while the bolts themselves serve the double purpose of securing the fingers and as guides to the cutter-bar substantially as set forth.

I also *claim* the use of the rivets *g g*, when projecting above and below the cutters, and used with the interspace *f* and recesses *s s* of the fingers.

No. 14,980.—JAMES T. YOUART.—*Improvement in Grain and Grass Harvesters.*—Patented May 27, 1856.

The reciprocating motion of sickle C causes the square edged collectors D to vibrate about the pivots *a* which are attached to the frame A. The projections *a'*, as they vibrate, collect the grass and press it against the cutting edge of the sickle C, and cause it to be cut.

Claim.—The cutting device formed of the reciprocating frame B, with the straight edged sickle *c* attached, in combination with the square edged collectors D connected with the frame B, and having a vibrating movement.

No. 15,029.—ALLEN B. WILSON.—*Improvement in Grain and Grass Harvesters.*—Patented June 3, 1856.

As the machine is drawn along a reciprocating motion will be communicated to the bar E by means of wheel B and bar G, and the cutters D will act alternately against the sides of the strips *a* on the fingers C between which they are placed, the strips *a* preventing the cutting edges of the cutters from being injured or becoming dull, and forming a bearing for the grass or grain.

Claim.—The elastic strips *a* fitted in the fingers C.

No. 15,672.—OREN STODDARD.—*Improvement in Grain and Grass Harvesters.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim the pivoted cutters K, irrespective of the peculiarity of their relative position or movements with each other, as shown.

But I *claim* the cutters K pivoted to the finger-bar D, and operated by the cams *a* on the shaft L, when said cams are placed in varying positions, as described, for the purpose set forth.

No. 16,057.—MOSES G. HUBBARD.—*Improvement in the Cutting Apparatus of Grain and Grass Harvesters.*—Patented November 11, 1856.

The single cutter *c* is caused to vibrate between the upper and lower halves of the double cutter *b*, and the grass while being cut is sup-

ported both above and below the edge of the single cutter, by the double edge of the double cutter *b*, as effectually as it has heretofore been by the ordinary guard finger.

Claim.—The combination of a single cutter with a double cutter, when both are constructed substantially in the manner described, and made to reciprocate in directions opposite to each other, substantially in the manner and for the purposes described.

No. 16,097.—C. A. McPHETRIDGE.—*Improved Binder for Grain Harvesters.*—Patented November 18, 1856; antedated October 25, 1856.

A detailed description of this invention would take up too much space to be given here. The principal features of it will be understood by reference to the claim and engravings.

Claim.—The combination of the reciprocating arm G^1 , with spring pliers *G*, attached with stationary arm *M*, revolving twister *r*, cutting plate *q*, friction brake q^1 , spring *u*, and movable plate *o*, when the same are constructed and arranged to operate in relation to each other, and the main frame and driving wheel, for the purpose of binding grain from a continuous coil of wire, in the manner described and set forth.

No. 14,036.—GEORGE W. N. YOST.—*Improvement in Grain Binders for Harvesters.*—Patented January 1, 1856.

The nature of this invention can be understood by reference to the claim and illustrations.

Claim.—The double reciprocating compressor a^2 for gathering and compressing the grain against the stationary compressors *a a*, ready for binding, operating and operated substantially as described.

No. 15,264.—WALTER A. WOOD.—*Improved Guard-Finger for Harvesters.*—Patented July 1, 1856.

In this improved guard finger, there is united in what is termed the wide guard elements not heretofore united in one guard, viz: the raised cutting edges *a a*, the narrow neck *C*, the rear depression *A*, and the forked cap *E*; all of which aid to facilitate the cutting, and readily pass the cut grass over the finger-bar *B*.

Claim.—The particular form and construction of the finger or guard, as herein represented, viz: with the forked cap *E*, recess or depression *A*, raised edges *a a*, and neck *C* behind them, by means of which the cutting is facilitated in the manner set forth.

No. 15,311.—C. WHEELER, jr.—*Improvement in Raking Attachment to Harvesters.*—Patented July 8, 1856.

When the rake R^1 is at the outer end of the platform *A*, the teeth *b* will be in gear with pinion *L*, and the rope *c* will draw the slide *R* and

rake R^1 across the platform, and will rake the grain off the end of the platform. When the rake reaches this point, the cam U will actuate the rod T , and said rod will turn the ways $P P$, so that the rake R^1 will be raised clear of the platform as shown in fig. 1, and the teeth a will then gear into the pinion L , and the slide R and rake R^1 will be moved to the outer end of the platform with a comparatively slow movement. When the rake R^1 reaches the outer end of the platform, the cam U again actuates the rod T , and the guides $P P$ are turned sufficiently to cause the rake R^1 to assume a horizontal position, and return as described above.

The inventor says: I do not claim a reciprocating rake operated by the cords attached to a pulley M , having a reciprocating rotary motion, irrespective of the mode of operating said pulley, and the arrangement of the rake.

But I *claim* the disk J , with teeth $a b$ attached and gearing into a pinion L , on the shaft K of the pulley M , in combination with the cam U , rod T , and guides or ways $P P$, between which the slide R , to which the rake is attached, moves.

The above parts, being arranged and operating as shown, for the purpose specified.

No. 16,131.—WILLIAM WHITELEY, jr.—*Improved Raking Attachment for Harvesters*.—Patented November 25, 1856.

As the machine is drawn along, the rod H is moved back and forth over the platform by crank F and pitman I , the rod H working from its point of attachment to the main frame, that point being the centre of motion. As the rod H is moved backward the teeth c rake the grain off the back end of the platform B , the rod and teeth being raised by the elevated outer part of the plate J , so that the teeth are disengaged from the grain and do not interfere with its proper discharge from the platform. As the rod H passes forward it catches into the fork of lever K which throws bar H upward, preventing the teeth c from coming in contact as the grain falls upon the platform.

Claim.—The combination of the balance lever K with plate J , for operating the rake $H c$ in its forward motion, in the manner and for the purpose set forth.

No. 14,183.—A. H. CARYL.—*Improved Raking attachment to Harvesters*.—Patented February 5, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I do not claim a reciprocating rake placed underneath the platform C , for that has been previously used; but I *claim* operating the rake, that is, the rod E , provided with teeth b , by means of the weight I and pulley G ; the weight and pulley being connected to the rod E by chains F , and otherwise arranged, substantially as shown and described.

No. 15,751.—JESSE WHITEHEAD.—*Improvement in Self-acting Rakes for Harvesters.*—Patented September 16, 1856.

In figs. 1 and 2 the rake is in position, just in rear of the cutters, to commence the gathering of a gavel; the latch O being down in the catch P, the arm I cannot move. As the pinion H turns, it draws, by means of the lever K, the carriage J and rake L with it along on the arm I, said rake forcing the cut grain along against its fellow M. This motion continues until the projection *o* strikes underneath the latch O, and raises it out of the catch P. The arm I is now released, and it swings around a quarter of a circle by the action of the lever K, until its end passes the spring latch R, (as shown in dotted lines in fig. 1,) when it is again locked, and the rake L is now ready to release its gavel and return back along the arm I, which it does by the reversed action of the pinion H, until projection *a* strikes against and pushes away the spring latch R, which again releases the arm I, and it immediately swings around into its former position and ready for the next operation.

Claim.—The combination of the swinging arm I and travelling carriage J, moving together and independent of each other, by means substantially such as described and for the purpose set forth.

I also claim the locking-arm I at each end of its transverse movement, so that the rake cannot swing around while the carriage J and rake L reciprocate together and discharge the gavel, substantially as described.

No. 15,387.—SILAS G. RANDALL.—*Improved Self-Raker for Harvesters.*—Patented July 22, 1856.

The general construction of this machine needs no especial description, it being represented in the illustrations sufficient for the present purpose. The carriage F bearing the shaft G of the rake H by means of the eyes g^1 and g^2 , can move upon the ways e^1 by means of the friction rollers f . The eye g^2 is provided with a projection, against which the rake-arm h^1 comes in contact, and thus prevents the rake from falling below the platform when it traverses beyond it. The roller i^1 , in connexion with the roller i^2 , carries a belt i , upon which is an eye J which receives the arm h^1 , and thus gives motion to the rake H and its carriage F. The eye J following the belt descends around the roller i^1 , depresses the rake-arm and elevates the rake to a right angle with the platform. The rods k^1 are attached to a head K, carried by a slide L beneath the platform; the rods k^1 are pushed out over the gavel space b as the rake advances, and the latter compresses the grain on said rods against the spring guard M; and as the rods k^1 recede, the grain drops to the ground.

Claim.—The railway carriage F, when constructed, arranged, and operated in respect to the platform B, substantially as and for the purpose set forth.

Also, the described method of operating the rake H, and giving it at once its traverse and its tilting actions, viz: by the combination with

the bent rake-shaft G and arm h^1 of the endless belt I and its eye J, operating as and for the purpose set forth.

Also, the combination of the traverse rake H, the spring rods k^1 , and the pressing guard M, substantially as and for the purpose set forth.

No. 14,784.—JOHN T. WHITAKER.—*Improvement in Self-Rakers for Harvesters*.—Patented April 29, 1856.

Motion being communicated to the shaft G, the crank-cam e revolves and causes the crank pin that works in the slot d to push the crank-lever I outward, carrying with it the connecting rod J and rake E, until the cam has traversed the whole length of the lower concave, at which point the rake F will have travelled over the entire length of the platform N, and deposited the grain in a bundle upon the cradle L.

The cam now begins to press upon the upper concave of the cam yoke H, raising it, which causes the shaft E to rotate upon its axis, throwing the rake round and clear of the platform. As the cam yoke is raised, it drags up the connecting rod h , which causes the cradle L to rotate backwards, dragging its fingers from beneath the grain, which is stripped off them by the stationary teeth M. Simultaneously with this movement of the cam yoke does the crank pin e press the lever I inwards towards the platform N, causing the rake F, in conjunction with the rotary motion of the rock shaft E to recede over the dotted line 1, 2, 3, 4, until the cam e again begins to press against the lower concave, causing the rock shaft E to turn until the rake is brought into the same position from whence it started.

Claim.—1st. The rock shaft E in combination with the rake F and connecting shaft J.

2d. I claim, in combination with the rack F, the cradle L, when operating in the manner and for the purposes set forth.

3d. I claim the method of adjusting the rake F, so as to enable it to rake from platforms of different widths of cut, substantially as described

No. 14,861.—HUGH FORESMAN.—*Improvement in Self-Raking Attachments to Harvesters*.—Patented May 13, 1856.

The apparatus by which the raker is operated is attached to the reaper in such a manner that its top constitutes in itself the platform of the reaper, on which the cut grain falls. The teeth of the rake project through the platform, (which has been removed in the drawing,) and move in circular slots in said platform.

The operation will be readily understood from the engraving.

Claim.—The combination of the wheel D, adjustable crank E, slotted rake F, and the guides or ways g m for giving the rake its traversing and rising and falling motions, substantially as herein described.

No. 15,084.—J. C. PLUCHE and L. C. PLUCHE.—*Improvement in Attaching Teeth to Sickle-bars of Harvesters.*

The nature of this invention will be understood from the claim and the engravings.

Claim.—Attaching the teeth D of the sickle to the bar C by the cleats c, secured to the back ends of the teeth, the cleats c being fitted in a groove b in the bar C, substantially as shown.

No. 15,926.—PELLS MANNY.—*Improvement in Sickles for Harvesters.*—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I do not claim the employment of back cutting teeth on the cutter-bar, and operating between the cutter and finger bars, and over the fingers, whether the same be formed by the extension of the front cutters or be separately attached at their base ends to the cutter-bar.

But I *claim* as an improvement in the cutting apparatus patented to Henry Green, March 21, 1854, the arrangement at the back of the cutter-bar C, and for reciprocating operation with it, of a back set of cutters or clearers e between the finger and cutter-bars, when said teeth e are shaped and arranged to cut laterally forwards alternately in opposite directions through or over the backs of the fingers for joint action with the front cutter or cutters d, for the better clearance of the fingers and cutter-bar race, essentially as set forth.

No. 16,052.—GEORGE F. FOOTE.—*Improvement in Machines for Harvesting Grain.*—Patented November 11, 1856.

The operation of this machine is as follows: As the apparatus is drawn through the standing grain, the gathering bars P embrace the grain which is before the machine in two separate parcels, and bring it to the openings E¹ which are in front of the threshing cylinder A² in the case F; there the pins c and scrolls C force it between the concave g and the cylinder A², and the teeth of said cylinder comb off the grain, while the straw is discharged through the openings G in the rear of the cylinder. The grain is carried upwards by the threshing cylinder into the passage E, and passes down the box D to the screen H, whence the grain drops into the box Z, while the broken heads pass off into the box Y.

Claim.—The peculiarly constructed scroll cylinder A², in combination with the cylinder case F and the gathering wheels M M, when the same are constructed and arranged to operate in relation to each other and the main frame A, in the manner and for the purposes set forth.

No. 15,569.—LARKIN L. MOORE.—*Improvement in Harvesting Machines.*—Patented August 19, 1856.

The frame a of the harvesting machine can be adjusted for cutting

higher or lower by operating the screw-winch F, which works in a nut *e* fastened in the body of the tongue D. The tongue is connected to the frame by means of the pivoted hounds E and a standard C, the pin *a* of the latter passing through a slot *f* in the tongue D. Thus, by turning the screw-winch the frame A will be raised or lowered, while the tongue remains in the same position as before,

Claim.—Adjusting the frame on its supporting wheels for cutting higher or lower, by uniting the frame and tongue by means of the pivoted hounds E, screw-winch F, and pin *a* passing through a slot in the rear of the tongue into the standard C, the above parts being arranged and operating in the manner and for the purposes set forth.

No. 15,669.—JOEL Y. SCHELLY and JOSEPH STAUFFER, assignors to WILLIAM WATSON.—*Improvement in Harvesting Machines.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventors say: We do not claim the supporting of the frame of a harvester on two main wheels, in the manner of a cart, with a caster-wheel in front of them; as the frame of a harvesting machine patented to Edward Badlaw, jr., on the 18th day of September, 1835, is thus supported.

But we *claim* the combination of the driving wheel E, supporting wheel F, caster-wheel L, hinged-tongue K, and the main frame, when the said parts are arranged and operate in relation to each other in the manner herein set forth.

No. 15,659.—WILLIAM A. KIRBY.—*Improvement in Harvesting Machines.*—Patented September 2, 1856.

A, B, and C constitute the parts of the frame to which are attached the tongue D, cutter E, and driving wheel K. The plate H, which is attached to hub I, can be made to swing on the pivot G, and plays by means of a flange *e* in a groove of the rim L. The driver's seat R is connected with the plate H by means of a rod pivoted to it at N; and thus when the frame swings the seat R swings with it, and the two remain always in a parallel position.

Claim.—The combination of the main wheel K, single plate H, and rim L, when connected and operated together in the manner and for the purpose as described; I also claim the hanging the seat to the plates H, and to the standard S, as described.

No. 15,748.—GEORGE W. TOLHURST.—*Improvement in Harvesting Machines.*—Patented September 16, 1856.

The driving wheel A is provided on its inner rim with projections *b*, bolted to said rim, which work through the angular slot *j* of the

lever *h*, and thus vibrate said lever and its fulcra *f*; the vibratory motion of this lever can be used for operating the cutting apparatus of a harvester.

The inventor says: I am aware that continuous zig-zag slots or ledges have been used, of various kinds; but when these become damaged by wear, they are irreparable. I do not claim any of these.

But I *claim* the combined use of the single row of removable pins with the adjustable angular slot *j*, for the purpose of procuring a vibratory motion, to be applied to the cutters as set forth.

No. 16,244.—ROBERT J. MORRISON.—*Improvement in Harvesting Machines*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Hinging the guard or shield *E* by one of its ends to the frame *A*, and supporting the other end thereof on the tongue *D*, so that it may run or move on said tongue when the machine rises or falls to accommodate itself to the inequalities of the ground, or for passing over water courses, substantially as herein described.

No. 16,313.—JOSEPH CARPENTER.—*Improvement in Harvesting Machines*.—Patented December 23, 1856.

By depressing the lever *L*, the finger bar *J* and sickle *I* will be raised, and they may be secured at the desired height by turning nut *o*. By depressing lever *G*, the right side of the frame and the front wheel *E* will be raised from the ground, the frame being supported by the two wheels *B* and *D*. The front wheel is raised in order to facilitate the turning of the machine.

Claim.—The employment or use of the two levers *F G*, connected by the strap *j*, and attached to the frame *A* and bars *d g*, to which the wheels *D E* are attached, as shown, for the purpose set forth.

No. 16,253.—WILLIAM H. SEYMOUR.—*Improved Finger-Bar for Harvesting Machines*.—Patented December 16, 1856.

The finger-bar *A B*, together with the double guard fingers *D*, is made of cast iron, in one single piece. This finger-bar is hollow, and is provided inside with inclined ribs *F*, which cause the grass or other substances which enter during the operation of cutting to be discharged through the openings in the rear.

The inventor says: I do not confine myself to the form of finger-bar I have described; for so long as it is made hollow, it may be varied in shape and proportions without any departure from the principle of my invention.

I *claim*, 1st, casting the finger-bar, composed of an upper and an

under plate, united by the guard fingers all in one piece, substantially as described.

2d. The openings in the back of the hollow finger-bar, in combination with the inclined ribs, for the purpose and in the manner described.

3d. Ribs or partitions constructed and arranged substantially as described.

No. 14,539.—A. W. WASHBURN.—*Improvement in Cotton Hillers*.—Patented March 25, 1856.

The earth thrown inwards by the ploughs *c c* has to pass under the plates *d d*; consequently, by elevating or depressing said plates, the quantity of earth to be thrown up around the cotton plants can be regulated. The lifting-up plates *e e* gather in that portion of plants that may have fallen outwards, and retain them in a standing position until they are supported by the earth thrown up by the hilling ploughs *c c*.

Claim.—The lifting-up plates *e e* of my improved cotton hiller, or their equivalents, when arranged and operating in conjunction with the governing plates *d d*, and the hilling ploughs *c c*, substantially in the manner and for the purpose herein set forth.

No. 15,269.—OLIVER P. STEVENS.—*Improvement in Machines for Hulling and Scouring Grain, Seed, &c.*—Patented July 1, 1856.

The machine being set in motion, the upper ends of the guides *i i* are moved towards the valve *F* by pushing in the rod *E*. The grain in the hopper-shaped spout *M* slides into the machine, where it is moved along by means of fan *f g*. The grain is continually divided, by the teeth *t* causing it to fly so as to come in contact with the perforated fans, when some of it passes through the holes and is thrown amongst the teeth, until it is carried over the fan wheel, and is thrown between the guides *i i*, and against the face of the vertical chimney *O*; from thence it falls down, passing another round of the fan case and advancing more or less at each revolution, according to the position of the guides *i i*, until it is discharged over the fan case head *a* and out through the spout *N*. The current of air in the chimney *O* can be regulated by the valve *V* in the vertical trunk *B*¹.

Fig. 2 represents a plan view of the upper section inverted.

Fig. 3 is plan view of the middle section taken at the line *x x*.

Claim.—1st. The perforated fans *f g*, in combination with teeth set in the fan case *c*, as described, for the purpose set forth.

2d. The arrangement of the upper section of the fan case *c*, in its relation to the chimney *O*, in combination with the fans *f g* and guides *i i*, in the manner described, for the purposes specified.

3d. The adjustable guides or deflectors *i i*, combined as described and operating in the manner and for the purpose herein described.

4th. The air passages or chambers *B B*, arranged in each end and on

the top of the fan case, in connexion with the vertical trunk B¹, as herein described, and for the purposes specified.

5. The valve F operated in the manner described, in combination with the chimney O, for the purpose specified.

No. 15,985.—WILLIAM H. SMITH.—*Improvement in Mashines for Husking Corn.*—Patented October 28, 1856.

Motion is imparted to the disk wheel C, endless apron L, and brush cylinder A¹, by rotating shaft B. The ears of corn pass down between the apron L and the disk wheel C, and the husks are stripped from them by the teeth on the apron and wheel. The apron L is allowed to yield according to the size of the ears by means of the springs N, which have sufficient elasticity to allow the ears to pass down between the apron and wheel without causing the corn to be shelled from the ears. The brush cylinder A¹ strips the husks from the teeth *a* of the disk wheel.

Claim.—The combination of the toothed disk wheel C, elastic endless apron L, and brush cylinder A¹, arranged and operating conjointly, as shown, for the purpose specified.

No. 16,008.—HARLAN P. GERRISH.—*Improvement in Machines for Husking Corn.*—Patented November 4, 1856.

The ears of corn are placed upon the inclined plane F, and motion being imparted to the husking cylinder C, the stalk is first separated from the ear by the action of the knives I and K upon each other, as represented in fig. 1. The husking teeth *b* then separate the husks from the corn without injuring the latter; and as the husking cylinder keeps on revolving so as to come into the position of fig. 2, the husked corn drops down the inclined plane F, through the space between F and C.

Claim.—The use of the hooks *b b*, or their mechanical equivalents, arranged and made to operate essentially as described, in connexion with two knives I K, for the purpose of cutting off the stalk of an ear of corn and removing the husks therefrom.

Also, making the cylinder C, with the depression *c d e*, for the purpose as described.

No. 15,047.—OREN STODDARD.—*Improvement in Machines for Husking Corn.*—Patented June 3, 1856.

The stripping-rollers are formed of two parts *f g*: the parts *f* are permanently attached to the shafts L; but the parts *g* are placed loosely on the shafts, and have spiral springs *h* bearing against them; the springs *h* being placed on the shafts L L. *i* are flanches of India-rubber, for the purpose of stripping the husks from the ear.

The operation will be understood from the engravings.

Fig. 2 shows how the ears are cut from the stalks.

Claim.—The two stripping-rollers, constructed and arranged as shown, in combination with the cutting device formed of the gate or frame M, with the knife P attached, and the stationary knife Q on the platform N, the frame M being operated substantially as shown, whereby the husks are stripped from the ears, and the ears cut from the stalks.

I further *claim*, in combination with the stripping-rollers and cutting-device, the rollers W W, by which the ears are fed or guided into the inclined spout Y.

No. 16,023.—JOSHUA PERKINS.—*Improvement in Machines for Husking Corn.*—Patented November 4, 1856.

The operation of this apparatus is as follows: The ear of corn is first passed with the butt foremost through the aperture *g* into the trough G, so as to present the ear in a proper manner to the chisels A B. Motion then being imparted to the shaft H, and the frame E being at its highest elevation, the roller *i* forces back the bolt S, the frame E and chisels A B descend, and the chisels will pierce the stalk and separate it from the ear. By the continued movement of the gear *o* and its roller *i* the chisels will be forced simultaneously apart, so as to separate the husk from the ear and to press both in opposite directions, driving the ear out at the opening *g*, and the husk through the opening *h*.

Claim.—The improvement of so operating the two cutters or chisels A and B that, during their descent into the stalk of the cob, they may pass into it in contact with each other, so as to pierce but one hole, and thereafter receive a lateral motion simultaneously in opposite directions, so that, while one chisel or cutter is made to discharge the husk from the machine, the other is caused to discharge the ear therefrom in the manner described.

No. 16,201.—JOHN TAGGART and LEONARD A. GROVER, assignors to Themselves and E. W. BANKER.—*Improvement in Machines for Husking Corn.*—Patented December 9, 1856.

In operating this machine, an ear of corn, with the husk thereon, is placed between each set of jaws E when they are passing over the upper part of drum B. In passing by the drum B, the jaws will close together and grasp the ear of corn firmly. During the downward movement of the carrier the stalk will be separated from the ear by means of the rotary saw F, and the ear, with the husk thereon, will be discharged into the inclined grate P. The teeth of the drum R, passing through the grate P, will seize upon the husk and draw it between the grate-bars, and thereby separate it from the ear, which will be discharged at the lower end of the inclined grate P.

Claim.—The combination of the endless receiving and discharging carrier, constructed as described, the rotary cutter or saw F, the inclined grated-spout P, and the tooth-drum R, as arranged and made to operate together, substantially in manner and for the purpose as specified.

No. 16,204.—ROBERT BRYSON.—*Improvement in Machines for Husking Corn.*—Patented December 9, 1856.

The ears of corn are placed upon the apron G, and are fed along between the two aprons G and I. The corrugated rollers rotate in the direction of the arrows. The husks are stripped from the ears by the two inner rollers E F, and the portions of husks that are carried upwards by the teeth *a* of the apron I are passed over the inner and upper rollers, the guard J preventing them from following the apron I, and pass down between the two upper rollers, and out between the two outer rollers, while the husked corn passes down, between the lower and inner roller, and the endless apron G.

Claim.—The combination of the two endless aprons G I, corrugated rollers E, F, F, and guards J, when constructed, arranged, and operating as shown for the purpose set forth.

No. 14,864.—J. H. GOULD.—*Improved Husking-Thimble.*—Patented May 13, 1856.

Claim.—The device herein shown, resembling the end of a human finger, and formed by providing a thimble A, very similar in construction to a sewing thimble, and welding or otherwise forming an artificial finger-nail B on the upper side of its forward extremity.

No. 15,876.—J. W. BARNES.—*Improved Manure-Distributor.*—Patented October 14, 1856.

As the tappet-wheel G revolves, the lever E is raised and lowered, and gives a vibratory motion to the hinged-bottom D and side *a'* of the wagon. By graduating the length of the chain N, the amount of manure escaping through the open bottom can be regulated.

Claim.—I claim the hinged side *a'*, combined with the hinged bottom, as set forth.

No 15,629.—WILLIAM H. WHITMAN.—*Improved Implement for Milking Cows.*—Patented August 26, 1856.

In using this instrument, the operator grasps the handle B of the case A with the left hand, and the teats of the cow are placed in the holes *b*; the crank E is then turned with the right hand, and a vibrating motion is given to the fingers F, by means of the cams D and elastic bars G, and the teats of the cow are intermittingly compressed by the fingers F in the holes *b*, and the milk is drawn from the bag, and passes down the holes *b* into the pipe C.

Claim.—Placing the fingers F within a case A, and at the sides of holes *b* in the case, the fingers being vibrated by means of the eccentric rollers D D and the elastic bars G G, the whole being arranged substantially as shown, for the purpose specified.

No. 15,265.—ANSON S. HATHAWAY, assignor to Himself and FREDERIC RUGGLES.—*Improvement in Machines for mowing Grass and cutting Grain.*—Patented July 1, 1856.

The fulcrum of each lever O (to whose opposite end a common scythe P is affixed) is so adapted to a strut S projecting from the axle A as to be capable of sliding or moving longitudinally thereon, such movement being produced by means of two connecting rods *h* and *i*, and a lever *k*, and operated by means of the lower crank *e* of an upright shaft K.

The scythe P will also receive a vibrating motion in addition to the above described sliding motion, by means of rod *f* and bell-crank *b*; this compound motion of the scythe P corresponding very nearly to that which is given to it when used in the hands of a farmer. The grass as it is cut falls between the guard rods Q, (fig 3,) which are moved through it, and as the scythes rest on them with the backs of their blades, they are kept down to the surface of the ground.

Claim.—The scythes P P, when arranged in relation to each other, and operated by mechanism constructed and arranged as above described, in combination with the peculiarly constructed and independently acting guards Q Q, operating substantially in the manner and for the purpose set forth.

No. 14,078.—HENRY PEASE, assignor to HENRY PEASE and JAMES ROBY.—*Improvement in Mowing Machines.*—Patented January 8, 1856.

This improvement refers to those machines where the line of draught is in the centre, and the cutter I extends to both sides of said line of draught. The knife *k* is fitted in the slotted arm J¹, in the centre of the cutter I, and receives rotary motion from shaft F by means of band *l*; the knife and arm divide and cut the grass so that it will pass each side of the driving wheel.

Claim.—The slotted arm J¹ and rotating knife *k*, arranged substantially as described, for the purpose set forth.

No. 14,138.—JOSEPH S. MANNING.—*Improvements in Mowing Machines.*—Patented January 22, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—Forming the teeth or fingers J J, with a central rib *g*, (closing the usual slot,) in combination with the cutter plate K, and reciprocating blades H, constructed substantially as described, for the purpose of more effectually preventing the clogging of the cutters, as set forth.

I claim the derrick for elevating the cutter bar or beam, consisting of pulley or windlass F, ropes *a a*, and straps *d*, passing over the shoulders of the horse, arranged and operated in the manner set forth.

No. 14,404.—JACOB J. MANN.—*Improvement in Mowing Machines.*—Patented March 11, 1856.

The nature of this invention consists in the peculiar manner of hanging the reel of the machine, whereby the cut grass is allowed to pass over the cutter-bar without any obstruction caused by the supports of the reel.

Claim.—The construction of the reel frame I J K K, the same being braced by the rod L; and the suspension of the reel E, at the outer extremity of the shaft G, by the pendant L.

No. 14,445.—SAMUEL COMFORT, jr.—*Improvement in Mowing Machines.*—Patented March 18, 1856.

The bar C and plate Q form a passage *f*, which communicates with the interior of the boxes D and B. An endless chain formed of angular cutters *d* and links *h* traverses the passage *f*, so that the cutters shall pass between and be guided by the lips *e* and by the cover-plate Q, which is attached to the bar C.

I do not desire to claim the use of endless chains of cutters for mowing machines, nor any particular method of constructing such chains.

But I *claim* the employment in mowing machines of an endless chain of cutters which shall traverse along the cutter-bar, and a sufficient distance above the same to allow the mown grass to drop between the said chain, being operated substantially in the manner set forth.

No. 14,961.—WILLIAM F. KETCHUM.—*Improvement in Mowing Machines.*—Patented May 27, 1856.

The nature of this invention consists in providing the means of raising the cutter-bar of mowing machines from the ground, so that the weight of the cutter-bar shall act upon a wheel and the machine may be easily moved when not in operation.

The inventor says: I am aware that Horace L. Emery, of Albany, has heretofore used an adjustable arm with a wheel thereon at the outer end of the cutter-bar behind the shoe, for the purpose of elevating and depressing the cutter-bar at pleasure to adapt it to working or travelling; and that a similar arm and wheel for a similar purpose have been placed at the inner end of the cutter-bar behind the shoe. These I do not claim.

But I *claim* attaching anywhere between the shoes to the back part of the cutter-bar A of a mowing machine an adjustable and jointed lever F B, either with or without a wheel, for the uses and purposes herein described.

No. 14,898.—JONATHAN F. BARRETT, assignor to ABRAM B. & JONATHAN R. BARRETT.—*Improvement in Mowing Machines.*—Patented May 13, 1856.

The front of the guard P conforms to the shape of the saws, and is furnished with teeth *h*, to prevent clogging. Behind these teeth the

guard is so formed as to consist of a rim *r*, enclosing the space occupied by the gearing. Fitting against this rim, and passing between the saws *C* and their pinions *a*, close to the saw and pinion connexion, is the covering plate *m*, forming the top of the chamber occupied by the driving mechanism, and excluding the cut product therefrom.

The inventor says: I make no claim to the rotary cutters, nor to the gearing driving them; but I *claim* the combination of guard plate *P*, covering plate *m*, and saw connexion to pinion, whereby the driving mechanism is effectually excluded from foreign matter.

No. 14,874.—C. M. LUFKIN.—*Improvement in Mowing Machines*.—Patented May 13, 1856.

As the shaft *F* rotates, the bevel wheels *d* will rotate the upper cutters *D* in one direction, while the bevel wheels *e* will rotate the wheels *c* and lower cutters *D*¹. The grass passes between the fingers *L* and is cut by the cutters, the teeth operating like shears; and the cut grass is carried over the cutting device by the endless aprons *J*, and falls on the ground back of the cutters.

Claim.—The employment or use of the endless aprons *J*, in connexion with the rotating cutters *D D*¹, arranged as shown, for the purpose specified.

No. 15,160.—CORNELIUS AULTMAN and LEWIS MILLER, assignors to BALL, AULTMAN, & Co.—*Improvement in Mowing Machines*.—Patented June 17, 1856.

The connexion of the cutter-bar *R* is affected by hinges *F F*¹, braces *B* and *C*, hinges *E E*¹, and brace *G*. The cutter-bar can thus be raised and lowered so as to adjust itself to the unevenness of the ground, and can also be raised up entirely, and fastened to the machine after the work is finished.

The inventors say: We do not claim connecting the cutter-bar to the machine by a hinge-joint, nor do we claim the joint at or near the extremity of the cutter-bar; but we *claim* connecting the cutter-bar to the machine by the double rule joint, or the double-jointed coupling piece *B C* in the manner and for the purposes set forth.

No. 15,354.—JOHN W. THOMPSON.—*Improvement in Mowing Machines*.—Patented July 15, 1856.

The nature of this invention consists in the arrangement of the frame *r* and sustaining arm *q* with the driving wheel *A*, by which the cutter-plates *c* can be operated in a box *o n* attached to the rear ends of freely vibrating hinged arms *K l*, which allow the cutter-plate box to rise and fall as the surface of the ground varies, for the purpose of keeping the points of the cutter-teeth at the proper distance from said surface.

Claim.—Connecting the cutter-plate box *O M* to the after ends of freely vibrating arms *K l*, in combination with the rectangular frame

v and the inwardly projecting and sustaining arm *g*, when the said parts, together with the cutter-plates and their gearing, are arranged in relation to the main wheel *A*, substantially in the manner herein set forth.

No. 15,507.—EPHRAIM BALL.—*Improvement in Mowing Machines.*—Patented August 12, 1856.

The cutter-bar *D* is connected with the frame *A B* of a mowing machine by means of the braces *E C*, which are hinged to the frame and cutter-bar, in order to permit the latter to be raised. The manner of uniting brace *C*, cutter-bar *D*, and plate *L* is represented in fig. 2; projection *g* fits into notch *e*, and *d* into *f, h* on the under side of plate *L* into *m n*—the connexion forming a lock fastening to prevent the cutter-bar from working loose in consequence of the strain upon it.

Claim.—The lock fastening for such cutter bar, made by the removed and upset portions of the brace and the extremity of the cutter-bar, as set forth.

No. 16,274.—ANDREW M. HALL.—*Improvement in Mowing Machines.*—Patented December 23, 1856.

The driving-wheel *C* transmits rotary motion to the crank-shaft *F*, and thence by means of short pitman *f* to rock-shaft *G*, which causes pitman *H* to vibrate and operate the cutter-bar.

The inventor says: I do not claim hinging the cutter-bar to the main frame by a hinge connexion, in order to enable the said bar to accommodate itself to the ground it may pass over.

I *claim* operating the pitman *H* by means of the mechanism described, when the same is constructed and arranged in the peculiar manner and for the purposes set forth.

No. 14,070.—GUSTAVUS STONE.—*Improvement in Blades of Mowing Machines.*—Patented January 8, 1856.

These blades can be cut from the sheet steel with little waste, and the clearing space *J* is larger than when a hole is punched through.

I do not claim the invention of mowing machines, or of the several parts thereof, generally; but I *claim* making the sections of which the grass cutting blades are usually made of two pieces of steel, *A* and *B*, with but one cutting edge *D* upon each, and so placing them upon the bar *C* that there shall be a wedge-shaped opening *J* between the backs, closed at the points, and widening out towards the bar.

No. 15,203.—WALTER A. WOOD.—*Improved Dividing Shoe for Mowing Machines.*—Patented June 24, 1856.

The point *a* of the shoe divides the grass that is to be cut from that which is to be left standing—that which is to be cut being bent over by the shield portion *i*, in proper position to be reached and severed by the sickle.

Claim.—The particular form and construction of a dividing shoe for mowing machines, by means of which the grass on either side of it is divided and bent over without breaking or crushing, so that the sickle will reach it all, and thus prevent “combing or ridging.”

No. 16,247.—JEREMIAH W. MULLEY.—*Improved Mowing and Reaping Machine.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engravings; the arrangement of the parts mentioned in the second claim, serves for raising and lowering the cutting apparatus by operating lever 2.

The inventor says: I do not claim placing the platform lower than the wheel frame. Neither do I claim the large driving-wheel in connexion with an elevated main frame.

I *claim* connecting the frame of the platform with the frame carrying the driver's and raker's seat, in the manner substantially as set forth, namely, securing the relative position of the frames by means of the brace J in the rear, and the laterally inclined draw-shoe K in front, when the above parts are constructed and arranged as described.

I also claim the rod 4 and the rails 5, connected in the manner described, in combination with the pole N, the rocking-shaft 3, and the lever 2; the whole being constructed, arranged, and operated in the manner specified and for the purpose set forth.

No. 15,338.—MOSES G. HUBBARD.—*Improvement in the Frames of Mowing and Reaping Machines.*—Patented July 15, 1856.

This invention consists in the mode of constructing the parts connecting the driving-wheel with the cutting parts. A cone-shaped metal tube *a* is formed, having a depression on its upper side along which the axle *a*¹ of the driving-wheel *b* lies, attached to it by bearings *c*; thus the tube *a* is suspended under the axle, and projects downward nearly to the ground, having secured at the lower end the finger-bar *f*. An iron step or brace *g* is formed in the tube *a*, to which the finger-bar can be attached when it is required to raise it; the brace *g* also serves to strengthen the tube *a*.

Claim.—The cylindrical conical-formed metallic frame, as a support for the running gear and finger-bar, when constructed, arranged, and combined therewith in the manner and for the purpose set forth.

Also, in combination with said cylindrical or conical metallic frame *a* the step or brace-frame *g*.

No. 14,631.—E. P. LACEY.—*Improvement in Corn Planters.*—Patented April 8, 1856.

The nature of this invention consists in so constructing the machine that the driver can, by a slight pressure of his foot, drop the requisite quantity of seed at such distances apart as he may desire.

Claim.—The combination of the seat S with the treadle or foot-lever *f*, rod *r*, bar *m*, and rack and pinions P P; the whole operating in the manner and for the purpose set forth.

No. 14,776.—SILAS G. RANDALL.—*Improvement in Corn Planters.*—Patented April 29, 1856.

In moving the lever B to the position shown in dotted lines, the lid F is moved aside from the mouth of the tube E, letting out the seed. The slide H is moved upward by the connecting-rod C, and the measuring cavity *h*, being above the brush, is filled with seed through the slots. The machine is now lifted from the ground, and the lever is returned to its first position, thus causing a descent of the slide, so that the seed is discharged below the brush into the tube upon the lid.

Claim.—Combining with the seed-tube E a cut-off valve F, for closing or opening said tube, as the case may be; said valve moving edgewise against the soil when the passage is opened to allow the grains to pass into the ground, and operated from a lever B, substantially in the manner and for the purpose set forth.

No. 14,785.—SAMUEL WILT and GEORGE W. ALBAUGH.—*Improvement in Corn Planters.*—Patented April 29, 1856.

When the movable portion K has reached the opening through the hopper at *h*, the spring *n* throws its end into a recess *m*, whereby the receptacle *g* is enlarged so as to permit the liberation of the seed therefrom with great certainty.

The movement of the slide E is obtained by the arm *p*, the rod B, and crank S.

Claim.—The use of the slide E in corn planters, when provided with expanding grain receptacles *g g*, and when the divisions *o o* of the hopper are provided with strikers P, all operating substantially in the manner set forth, for the purpose of preventing the choking, from wedging of seed, and insuring its delivery to the drill tube.

No. 14,801.—REINHOLD BOEKLEN.—*Improvement in Corn Planters.*—Patented May 6, 1856.

The continued descent of the seed box A brings the inwardly inclined upper parts of the covering plates E E into contact with the inclined upper portions of the projections *n n*, and causes the parts *l l* to be thrown outwards, and the lower parts to be thrown inwards towards the plunger tube D, and to grasp a quantity of earth between themselves and the plunger tube; and it eventually brings the spring catch over the notch *o*, and locks the plunger tube to the seed box. During the lifting of the seed box with the plunger tube locked to it, the seed passes into the ground, and the earth *q q* is lifted until a shoulder *r* comes in contact with and forces out the spring catch *p*, so as to liberate the plunger tube, which falls by its own weight; and its projections

n in passing the centres of motion i i of the covering plates, throws out the lower parts thereof and releases the earth, which falls back into the hole in the ground just as the plunger valve begins to be lifted by the stop b acting on the pin k , and covers the corn which has been deposited.

Claim.—The employment of one or more covering plates E E , applied in connexion with the seed box or tube and plunger, and operating to lift a quantity of earth and deposite it over the corn which has been planted.

No. 15,322.—MOSES BEMIS.—*Improvement in Corn Planters.*—Patented July 15, 1856.

The nature of this invention consists in attaching the frame of the machine to the axle and wheels by using bearings, as represented at N , which facilitate the operation of the machine in passing over inequalities of the ground; and also connecting the point of draft behind and below the axle at M , for the purpose of counteracting the downward pressure forward, and to facilitate regulating and governing the depth of planting by raising and lowering the frame A by means of the arm O and pins as connected with the tongue.

Claim.—Arranging the frame upon the axle and wheels, and connecting the point of draft behind and below the axle, and in combination with the arm O and pins.

No. 15,426.—JAMES D. JEFFERS, JOSEPH SPARKS, and JOHN H. JEFFERS.—*Improvement in Corn Planters.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventors say: We do not claim the tubes H H , nor do we claim operating inclined planes and vents together in a corn dropping box irrespectively of the peculiar construction and arrangement of the same, as described; nor do we confine our claim to any number of boxes A upon one carriage, nor to any number of dropping vents in each box.

Claim.—1st. The moving inclined planes l l and springs C C , when constructed and combined so as to operate together within the grain-adjusting recesses E E , substantially as and for the purposes set forth and described.

2d. The stationary inclined planes D D , when operating in combination with the said recesses E , substantially as and for the purpose set forth and described.

No. 15,755.—MALENDER BATES.—*Improvement in Corn Planters.*—Patented September 23, 1856.

In working this machine, the operator drops a hill at his pleasure from the valve n , by simply gripping the hand-lever with the right hand, when the spring s on the end of the axis e reverses the motion, which shuts the valve n and drives the wheel l far enough to discharge the

next succeeding aperture filled with the seed into the orifice of the tube.

The inventor says : I do not claim the application of a valve to the bottom of a tube.

Neither do I claim the construction of a tube for the purpose of conveying seed from the hopper to the ground ; for these principles have been variously applied, for the same purpose, in various machines.

Nor do I claim operating an axis by means of a hand-lever and spring attached to the handle of seed planters ; for these, also, have been used in other machines, to effect different purposes, such as drawing slides, reciprocating plates, and opening apertures.

But I *claim* the rotating ratchet-wheel *r*, provided with feeding apertures, in combination with the wire-screen *w*, or its equivalent, the spring pawl *m*, guard-pin *i*, and wire button *o*, acting in the manner and for the purpose described.

No. 14,134.—JOHN M. JONES, assignor to NEWTON FOSTER.—*Improvement in Cotton-Seed Planters*.—Patented January 22, 1856.

As the disk *D* revolves, its ratchet-teeth *W* act upon arm *U*, extending from rim *I*, and thus impart a vibratory motion to said rim. The seeds being placed in the hopper, the flexible arm *G* forces them through the cavities in disk *D*, the arms on the rim *I* taking them off as they pass through ; the disk *D* and arm *G* having a reverse motion, the arm *G* passes each cavity twice every revolution ; hence the necessity for double the number of arms on rim *I* that there are cavities in the disk, which arms are so arranged with respect to arm *G* that as soon as the said arm forces a seed through a cavity, (where it would be liable to hold by its fibre,) an arm on rim *I* removes it, and the vibratory motion of the rim and its arms causes its immediate liberation.

Claim.—The disk *D*, constructed with exit apertures *K*, cavities *V*, and ratchet *W* ; and, also, the vibrating rim *I*, with flexible arms *Y* thereon ; the said disk being rotated upon said rim in combination with, and in opposite direction to, the flexible arm *G*, in the manner and for the purpose set forth.

No. 14,240.—J. L. HORN.—*Improvement in Cotton-Seed Planters*.—Patented February 12, 1856.

The inventor says : I do not claim a distributing wheel running upon the ground, nor do I claim projecting rims or flanges upon such a distributing wheel.

But I do *claim* the arrangement of the back and front guards *C*¹ *C*², in combination with the distributing wheel *A*, provided with the flanges *B B* and chargers *C C*, placed at proper intervals, so that no seed can escape below the horizontal line *X X*, except at the proper or lowest point *I*, immediately in the rear of the opener *E*.

No. 14,529.—A. W. WASHBURN.—*Improvement in Cotton-Seed Planters.*—Patented March 25, 1856.

The channel-former F is connected to the set screws *b b*, in such a manner that it can be made to project more or less from the under surface of the ridge-former C. *i* is a perforated moveable band that serves to regulate the size of the discharging apertures; K is the hopper; M M are covering spurs; B is a roller to reduce the crown of the ridge to a smooth rounded form.

Claim.—1st. The peculiar shape and arrangement of the ridge-former C and the adjustable channel-former F, by which their forward movement enables them, when suitably loaded, to unerringly form a perfectly smooth channelled ridge, substantially as herein set forth.

I also claim the combination of the inclined flanches K K with the inner periphery of the rotating seed-dropper G, when they are placed in such positions with relation to the discharging apertures, and have such a degree of inclination, that the said flanches prevent the seeds from being discharged out of the front (or descending) side of the said seed-dropper, and cause the seeds to be freely discharged through the apertures in the rear (or descending) side of said seed-dropper in view of the operator, substantially as herein set forth.

No. 15,260.—J. A. STEWART.—*Improvement in Cotton-Seed Planters.*—Patented July 1, 1856.

The cotton seed is placed within the hopper or wheel G, and as the implement is drawn along, the hopper is rotated and the seed passes through the slots *d* into the furrow made by the share E, the seed being covered by the share F. The rod or spike H prevents the slots from being choked with the seed by forcing the seed therefrom, in case of any sticking in them.

The inventor says: I do not claim a rotating hopper or distributing wheel, irrespective of the form herein shown, for they have been previously used; but I claim the hopper or wheel G, formed of the discs *a a*, and zig-zag rim *b* provided with slots *d*, substantially as shown for the purpose specified.

Further, the hopper or wheel G, in combination with the clearing rod or spike H, arranged as shown and described for the purpose set forth.

No. 15,640.—D. I. BEECHER.—*Improvement in Cotton-Seed Planters.*—Patented September 2, 1856.

An endless conveyor C, made up of a series of plates *p*, armed with rows of teeth *t*, passes around the shafts S S¹ underneath the hopper H, which contains the cotton seed. The conveyor carries the seed downward into the tube T, whose rear upper extremity is provided with a series of slots *d*, as represented in figure 2. The teeth *t* of the plates *p* pass through the slots *d* and effect the delivery of the seed into the

tube ; the passage of the teeth through the slots preventing the seed from being carried around with the teeth by the adhering of the fibres remaining upon the seed to said teeth.

Claim.—The combination of the endless series of arranged plates with the slotted discharge tube, constructed, arranged, and operating substantially as and for the purposes set forth.

No. 15,918.—CHARLES R. BELT.—*Improvement in Cotton-Seed Planters.*—Patented October 21, 1856.

As the machine is moved forward, the bar *f* is caused to oscillate on its centre, the connecting rod *g* on the end of said bar being operated upon by the gearings *m* and *h*, and the inclined bottom plates *a a'* are caused to vibrate, they being connected to bar *f* by means of the rods *e*. The rollers *F* and *G*, armed with pins *l*, prevent the seed in the hopper from packing, and deliver the seed to the bottom plates *a a'*, whence it is discharged, and drops into the furrow made by the point *r*.

Claim.—Effecting the seed discharge by the opposite reciprocation of the inclined plates *a a'*, constituting the bottom of the hopper, in combination with the armed rollers, or their equivalent, arranged and operating substantially as and for the purposes set forth.

No. 14,504.—WILLIAM JENKS.—*Improvement of Hand Corn-Planters.*—Patented March 25, 1856.

The feed-slide *A* is so arranged as to distribute the seed at *B*. When the plunger is drawn up, the seed falls into the chamber *D*. The plate *C*, with the notched chambers *h*, deposits the seed into the ground.

Claim.—The bolsters *E* and distributor *F*, in combination with point *C*, when arranged and operated for the purpose herein specified.

No. 15,035.—SAMUEL L. DENNEY.—*Improvement in Hand Corn-Planters.*—Patented June 3, 1856.

When the cylinder *C* is in the position shown in fig. 2, the weight of the pistons *a a a* will cause them to drop and form cups above the upper ends of *a* for the reception into each of a kernel of corn. A brush *B* shuts off the space above the cylinder from the four-way funnel *F*.

When the said cylinder is turned upon its axis to carry the seed-cups under and beyond the brush *B*, the projecting ends of the pistons *a a a* will strike against the cam *L*, and be forced inwards a sufficient distance to project the kernels of corn from the respective seed-cups.

When the slides *E E* and the handle *A* are elevated to their highest position, the said movement will turn forwards the cylinder *C* to discharge the kernels of corn from the seed-cups, and will elevate the piston-rods *P P* to enable the kernels of corn to fall into the planting receptacles. The downward movement of said slides and handle will

cause the piston-rods *a a* to descend and open the pouch pieces of the planting receptacles and discharge therefrom the kernels, and at the same time the cylinder C will be thrown into the position shown in fig. 4 to receive another charge of corn into the seed-cups *a a a a*.

Claim.—The combination of the planting cylinder C, the pistons *a a*, and the funnel F.

No. 15,114.—GEORGE ATKINS.—*Improvement in Hand Corn-Planters.*—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Attaching the plate E, by a hinge or joint, to the lower part of the box A, the plate E having a curved plate G attached to its inner side, which plate is provided with a hole *g*, and works over the curved portion *a* of the plate D, which is attached to the lower end of the box A; the straight portion *b* of the plate D being fitted and working between plates *c c*, attached to the plate E, substantially as herein shown and described, so that the distributing device may be operated by merely throwing forward the box A.

No. 15,616.—CORNELIUS MARTRATT.—*Improvement in Hand Corn-Planters.*—Patented August 26, 1856.

By pressing the handle H downward, the hopper *a b* is made to slide down the shaft A C to the screws *i i*; the recess *e* is filled with corn, and by drawing the machine upwards, the hopper is also drawn upwards, and the seed in the recess *e* is discharged into the recess *f*. By placing the spade A B again upon the ground, and pressing downward, the cavity *f* passes down, and discharges itself through the orifice E into the hollow of the staff A C; the time of this discharge can be regulated by adjusting the set-screws *i*; and thus, when the spade A B penetrates soft or hard ground, the discharge of the grain can be regulated according to the time necessary to penetrate the ground.

Claim.—The combination of the staff A C, collar *g*, and spade A B, with reservoir *a a b b*; the whole being arranged and operated in the manner, and for the purpose described.

No. 15,696.—HEMAN B. HAMMON.—*Improvement in Hand Corn-Planters.*—Patented September 9, 1856.

As the plunger C descends, it forces seed which may be in the seed tube A into the soil, and at the same time causes the wheel E to turn one-sixth of a revolution, and to deposit the seed contained in the offset *a'* into the end of the tube for another descent of the plunger.

Claim.—The employment of an hexagonal or many-sided revolving wheel E, having offsets *a' a' a' a' a' a'*, applied in connexion with the plunger and seed tube, substantially as and for the purposes set forth.

No. 16,135.—THOMAS A. CHANDLER, assignor to Himself and HARLOW HERRICK.—*Improvement in Hand Corn-Planters*.—Patented November 25, 1856.

The machine being placed on the ground, the handle B is pressed down, which causes the digger R to operate, and the slides E and jaws K move out, and the corn drops into the hole previously made by the digger. As soon as the seed is dropped out of the cup, by raising the handle B, and by the counteracting weight of the machine, the movements of the slides, jaws, and diggers are reversed.

Claim.—The slides C E, diggers R R¹, and rod I, substantially as set forth, and operating in the manner and for the purpose described.

2d. The jaws K K, cut-off S, and arm L, when constructed and arranged as described, and operating substantially in the manner and for the purpose set forth.

No. 14,767.—EDWARD HOPKINS.—*Improvement in Hand Seed-Planters*.—Patented April 29, 1856.

When the block 11 rises, it moves with it the sliding plate 12, being attached to the block by a slot cut through the side of the case. The cylinder 3 is thus revolved by means of rod 6, and the hinged lid 9 is drawn close down to the case by a pin 10, passing through a slot cut in the lid; when the machine is withdrawn, the lid opens and drops the seed. The spiral spring 7 pulls the plate 12 down, and throws up the semi-circular cylinder 3, for receiving another charge of seed in the adjustable vessel 4.

Claim.—The arrangement of the rod 6 and spring 7, combined with the catch-block 11 and sliding plate 12, for operating the semi-circular cylinder 3 and lid 9.

No. 15,431.—A. C. MILLER.—*Improvement in Hand Seed-Planters*.—Patented July 29, 1856.

The rod H passes through the hopper lengthwise, and upon the end of it is a coiled spring c, to throw it back after it has been pushed up by the operator against said coiled spring. Upon this rod is fixed a series of agitators I, which travel past the openings a of the stationary seed rod B, as the rod H is vibrated by means of the hand-lever J, and thus prevent the seeds from choking in said openings.

Claim.—In combination with the reciprocating agitators I, the stationary bent adjustable seed bar B, with its wedged-shape openings a and inclined sides b, for the purpose of sowing seed broadcast, and adjusting the machine to the quality or kind of seeds to be sown, as set forth.

No. 15,610.—J. HERVA JONES.—*Improvement in Hand Seed-Planters*.—Patented August 26, 1856.

When this seed planter is lifted from the ground, by taking hold of the levers a, it will assume its contracted position, the points c c, being

nearest together. The seeding cavity will now have deposited a sufficient quantity of seed for a hill in the discharging recess near *c*; the machine is then struck down, the points expand and enter the ground, until the bottoms of the reservoirs press the surface. This allows the shoulders of the levers *a* to withdraw from their recesses at the top of the slots; and as the pressure of the hands continues, the cap pieces *b b* become fulcrums, the lower section of the points are withdrawn from the ground, and the seed falls into the receptacle thus made. The machine being now lifted, the lower sections of the points are returned upon the seed, the whole machine contracts, and the points are withdrawn from the earth, leaving the seed in the ground.

Claim.—The use of a hinge or joint *B B*, or its equivalent, for connecting two single hand planters at their tops, for the purpose of allowing them, like a pair of compasses, to contract and expand in their operation, as set forth.

No. 15,433.—JOHN MOORE.—*Improvement in Potatoe Planters.*—Patented July 29, 1856.

The potatoes are placed in the hopper *N*, and fall into the chambers *a* of the cylinder *H*, and are discharged from said chambers as soon as the latter have passed the guard *M*; the helical scrapers *b* serve to remove any pieces which may remain between the cylinder *H* and guard *M*.

The inventor says: I do not claim a seed planter wherein there is a furrow opener, a contrivance for dropping the seed, and one for covering the furrow.

But I *claim* arranging and combining with the chambered cylinder *H* and its spring guards *M*, so as to operate therewith, as set forth, a series of scrapers *b b*, the same being for the purpose specified.

No. 14,144.—FREEMAN PLUMMER.—*Improvement in Seed Planters.*—Patented January 22, 1856.

The seed cup *z* is formed in the upper part of the slot in slide *f*, by setting the hinge *h* (in the lower part of said slot) so as to form an elbow, the upper part of which, when in this position, forms a bottom to the said cup *z*; when wishing to drop, the aforesaid slide is drawn down, at which time the cup *z* is drawn below the hopper bottom, bringing a solid portion of the aforesaid slide opposite the point at which the seed cup is formed and filled. When in this position, the hinge *h* is drawn straight, allowing a discharge of seed thus measured.

Claim.—The seed cup *z*, as formed by slide *f*, conductor *i*, and hinge *h*, as herein described.

No. 14,235.—ROBERT GEBBY and WILLIAM L. GEBBY.—*Improvement in Seed Planters.*—Patented February 12, 1856.

The corn having been placed in hoppers *A A*, and the machine having been set in motion, the operator at intervals depresses the

hand-lever *q*, thereby elevating the other or trigger end *s* of the lever frame *q P r s*. The trigger then actuates levers *t* on their pivots *u u*, so as to depress the strips *z z*, which, being formed with feed vents, carry down the seed. As soon as the operator removes his hand from handle *q*, the strips *z z* rise back to allow the seed receptacle to be charged again with seed. The stirrer or spur pin 14, attached towards the end of the valve-rod, in moving up and down, serves to loosen the supply of seed and prevent clogging. The flap *D* hinged to fender *C* can be elevated or depressed by means of adjusting-rod *E*, so that more or less pressure may be given to the soil.

Claim.—Constructing a corn planter with compound or double graduating or feeding-rod device *Z Z Z Z*, having a stirrer pin or spur 14, and combined in operation with the actuating lever device *P P q q r r*, formed with the trigger *s s*, and spur *V U*, and spring-hook or catch device *W W* and *y y*, constructed and used substantially in the manner described.

2d. The skimmer fender *C C*, formed with a hinged flap or pressure-plate *D D* and adjusting-rod *E F G H*, as described.

No. 14,465.—ELIJAH MORGAN.—*Improvement in Seed Planters.*—Patented March 18, 1856.

A shield *a* is fastened to the front inside part of the hopper *D*, and extends back, first horizontally, then downward, leaving a space *c* between its lower edge and the bottom of the hopper. The seeding-bar *F* vibrates under this shield, the grain passing through *c*, thence into the recesses *e* on the under side of the seeding-bar, and through the openings *f* into the ground.

Claim.—In combination with the dead hoppers *E E*, the chamfering or bevelling of the ends *i* of the seeding-bar *F*, and the scolloping of the shield *a*, so that any grain that may be carried to the ends of the seeding-bar may be forced by it into said dead hoppers, substantially as described.

No. 15,101.—PLYMON B. GREEN and EDWARD A. KENNEDY.—*Improvement in Seed Planters.*—Patented June 10, 1856.

Fig. 1 represents the planter as being forced down into the ground, with the orifice *o* in seed-slide *b*, which receives the corn at the bottom of the corn box *F*, and retains it until the machine slides down on seed-slide *b*, when orifice *n*, at the top of groove *m*, comes in connexion with orifice *o*, and the corn passes down to mouth *E*. On raising the planter from the ground, the mouth *E* is thrown open, depositing the corn into the ground; the spring *C* forces down at the same time the slide *b*.

Fig. 2 is a sectional front view, representing side springs *h h* and catches *l l*, which prevent the machine from sliding down on the seed-slide *b* until the mouth is closed.

Claim.—The seed-slide *b*, in combination with the foot *A*, side springs *h*, and catches *l*, arranged and operating in the manner and for the purposes set forth.

No. 15,106.—GEORGE A. MEACHAM.—*Improvement in Seed Planters.*—Patented June 10, 1856.

The machine being strapped to the foot, and the seed bag fastened to the waist of the farmer, and combined with the hopper B, the farmer rests his foot upon the ground and exerts pressure upon the step, and causes thereby the plunger E to ascend along with his foot, which forces the seed contained in the spring end of the tube A into the soil. As soon as this occurs he withdraws the pressure, and the slide rises by the action of the spring F, and carries up another hill of seed to be discharged into the spring end of the tube ready for the second descent of the plunger.

Claim.—1st. A machine for planting corn, constructed so as to be applied to and operated by the foot.

2d. The employment of the self-adjusting step G, applied in connexion with the plunger and slide E, seed tube or box A B D, and flexible seed conductor C, substantially as and for the purpose set forth.

No. 15,182.—GEORGE HALL.—*Improvement in Seed Planters.*—Patented June 24, 1856.

The nature of this invention is: Each cam F is hinged in a recess on the body of the driving-wheel H in such a manner that it can be turned on a pin *d*, and that the part *b* can be pushed into the recess C, so as not to project from the sides of the driving-wheel H.

Claim.—Hinging the cams F that operate the seed-slides to the face of the drive-wheel H, so that they can be swung into or within recesses C cut in the face of said wheel for the purpose of adapting the machine to planting at variable distances apart.

No. 15,691.—JOHN FORDYCE.—*Improvement in Seed-Planters.*—Patented September 9, 1856.

The seed passes from the hopper A through the apertures *i* and *e* down to the blocks *d*, and as the hinged board B¹ is vibrated by means of the handle C, the seed is discharged. The size of the openings can be adjusted by means of the slide *f*, which is provided with openings *i*. The finger *r*, attached to the blocks *d*, cause the grain, and in particular oats, to pass readily out of the hopper.

Claim.—In combination with the hopper and its adjustable openings the hinge-board B, and its blocks and figures, for regulating the discharge of the grain from said hopper, and insuring regular feeding, substantially as set forth.

No. 15,822.—JOHN F. SEAMAN.—*Improvement in Seed Planters.*—Patented September 30, 1856.

The seed is placed in the hopper M, and, as the machine is drawn along, the share T makes the furrow, and the driver causes the seed

to be deposited by operating the rod *l*. The rotary covering shares *L* cover the seed; those on one side of the frame being stationary while covering the seed, while those on the opposite side are rotating in order that they may free themselves of weeds or grass, &c.; the shares on the two sides of the frame turning alternately, so that all of them may be kept perfectly clean.

Claim.—The shares *L*, arranged substantially as shown, so that they may rotate intermittently, in order to free themselves of weeds, grass, and other incumbrances.

No. 15,810.—B. KUHNS and M. J. HAINES.—*Improvement in Seed Planters.*—Patented September 30, 1856.

The seed in the hopper *H* fills the pockets *i* of the rotating cylinder *g*, and the contents of said pockets are discharged in regular succession into cells *a*, whence the seed passes to the seeding tube. The quantity of seed in the pockets *i* is regulated by means of the pocket-clearer *R* swinging on a pivot *m*.

The inventors say: We disclaim, of itself, the pocketed roller, and also the cells surrounding the discharge openings.

But we *claim* the combination of the cell and pocketed roller with the pocket clearer, actuated by the rotation of the roller, operating as and for the purposes set forth.

No. 15,955.—JOSEPH H. SHIREMAN.—*Improvement in Seed Planters.*—Patented October 21, 1856.

As the machine is moved forward, the slide *x* is reciprocated by means of pitman *h*, which receives its motion from the driving-wheel, at the same time that the seed is prevented from clogging by the movement of the stirrer *n*, operated by levers *u* and *v*. The clearers *n* force the seed which is contained in the holes of the slide *x* out of said holes, thus keeping a free passage for the seed.

Claim.—The slide *x* and clearers *n*, in combination with the stirrer *w*, constructed and operated substantially in the manner and for the purposes set forth.

No. 15,974.—JESSE D. HAVIS.—*Improvement in Seed Planters.*—Patented October 28, 1856.

The seed in the hopper *B* passes down the inclined bottom and escapes through the aperture *p* into the seed tube *F*, whence it drops to the ground. The motion of the machine causes the hopper *B* to vibrate, and the seed to run freely through the opening *p*, the size of which can be regulated by means of the tapering pin *g* and screw *r*, and thus the discharge of the grain can be regulated at pleasure.

Claim.—The vibrating hopper *B*, in combination with the pin *g*, constructed and arranged substantially in the manner and for the purpose set forth.

No. 16,198.—HENRY WYANT.—*Improvement in Seed Planters*.—Patented December 9, 1856.

As the machine is moved over the ground, a reciprocating motion is imparted to slide H; when the slide moves to the left, the cup *a* is drawn up the inclined plane *m n*, and, passing under the brush M, the surplus seed is scraped off, and as the slide advances further, the cup *a* arrives over the seed tube S, where the seed drops to the ground.

Claim.—The employment of the seed cup or ring *a* and spring *b*, attached to and moving with the slide H, in combination with the inclined plane *m n* of the beam and brush M, operating in the manner and for the purposes set forth.

No. 16,314.—N. C. SHERMAN and J. MASON.—*Improvement in Seed Planters*.—Patented December 23, 1856.

When the plunger E is drawn upwards, the corn with which the opening *b* is filled passes through the opening *b*¹ and falls down at the lower part of the jaws B C, which are closed by spring D. The jaws being forced into the ground, plunger-bar G comes down, and, coming in contact with jaw C, causes it to turn on its pivot *a*¹, permitting the seed to drop into the pocket made by blades B and C.

The inventors say: We disclaim the wedge-shaped jaws, to be opened after having been thrust into the ground, thus forming a pocket or cavity into which the seed may fall. Devices of this kind are old, and an example is seen in Hughes's patent, November, 1855.

We *claim* the double plunger E, having bars F G, operating and combined with the seed box A and jaws B C, in the manner substantially as set forth.

No. 14,533.—MICAHAH CRENSHAW.—*Improved Cultivating Plough*.—Patented March 25, 1856.

The stock F, to which the digging hoes H are fastened, is held down by the springs G G. A cam wheel I is fastened to shaft D. The arm J rests upon the cam wheel for the purpose of imparting a vibrating motion to the stock E.

The inventor says: I am aware that rotating hoes have been used in connexion with ploughs and cultivators in various forms; this, therefore, I do not claim. But I *claim*, in combination with the series of cutting plates or disks E, the series of reciprocating hoes H, when the hoes are so arranged as to work in lines parallel with the cutters or disks, and so inclined downward and rearward as to readily rise up over any obstructions, without danger of clogging or choking, as set forth.

No. 14,726.—PELLS MANNY.—*Improvement in Sub-soil Ploughs*.

As the implement is drawn along, the coulter G, as it rotates, cuts the furrow slice in advance of the separating wing H; the separating

wing spreads or opens the furrow of the surface soil, while the mould-board D throws up the sub-soil, the mould-board being sufficiently narrow to take up only half of the sub-soil at each ploughing, and being relieved from the weight of the surface soil by the action of the separating wing.

Claim.—The combination of the circular rotating coulter G, separating wing H, mould-board D, and bar F, arranged substantially as shown.

No. 14,013.—GEORGE W. COOPER.—*Improvement in Ploughs.*—Patented January 1, 1856.

The nature of this invention can be understood by describing the manner in which said plough can be operated and adjusted. The handles B are secured to the beam A by means of screw bolts *a*; when the plough is raised up or let down by adjusting the stirrup H and bolt *i*, the standard C swings *a c*, and the joint *e* is raised or lowered, and takes up or lets down to the extent of the adjustment, whilst the handles, very slightly moving at *a*, maintain practically their same relative position in regard to the beam.

Claim.—Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by letters patent is, uniting the handles of the plough to the standard thereof by means of the self-adjusting elbow joint *e*, so that both the handles and the plough shall be susceptible of the same relative adjustment to the beam, as described.

No. 10,044.—BENJAMIN F. AVERY.—*Improvement in Ploughs.*—Patented January 8, 1856.

Fig. 2 represents the land side of the plough, the projection *e* of which fits into a corresponding cavity in the short land side represented in dotted lines in fig. 1; the hook *n* is intended to pass through a right-angled opening in the same, and the shoulder *f* of flange *h* to fit into the bottom part of the short land side in fig. 1.

Claim.—The lock joint, for holding the land side to the short land side, and mould-board; the same consisting mainly of a shaped projection *g*, hook *n*, and flange *h*, and their counterparts in the short land side.

I also claim the ears or lugs *d d*, cast on the inside of the mould-board, for the purpose of fastening the mould-board handle.

No. 14,224.—JOHN CLARK and GEORGE W. N. YOST.—*Improvement in Ploughs.*—Patented February 12, 1856.

By the forward motion of the plough the pressure of the sward on the surface of the circular cutting shares will cause them to revolve around their pivots *e e*, and cut away the earth before them speedily, thereby facilitating the draught of the plough.

Claim.—The revolving share-cutters B B¹, attached to the mould-board in combination with the bearing-plate or strap D, and the extension of the land side (or the equivalent of said bearing-plate D and extension of said land side) for securing the free and certain revolution of the series of revolving share-cutters B B¹, substantially in the manner and for the purpose set forth.

No. 14,288.—JAMES B. MELL.—*Improvement in Ploughs.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The standard A with braces B, in combination with the braces I C and beam D, constructed in the manner and for the purpose set forth.

No. 14,346.—JAMES T. CADENHEAD.—*Improvement in Ploughs.*—Patented March 4, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The adjustability of the brace K, in combination with that of the bar O and that of the beam C, for the purpose of regulating the pitch of the beam and the height of the beam and handles, together or separately.

No. 14,989.—GEORGE W. ZEIGLER.—*Improvement in Ploughs.*—Patented May 27, 1856.

By moving lever *p* towards handle B, arm *m* of shaft *l* will be moved in slot *i*, pressing against the upper face of said slot, turning the coulter about *f* by lifting arm *g*, and consequently depressing point *q* of the coulter.

The inventor says: I am aware that Harrison Norton obtained a patent, dated October 9, 1855, by which he regulated the depth of the furrow by a movable plough point, acting upon the same principle as that shown in my specification. I do not claim, therefore, to have been the first to invent that method of accomplishing this object; but I *claim* simply an improvement upon the invention of Norton, by combining with land side E and mould-board C a coulter F, jointed to the land side, and movable between land side and mould-board, independent of the mould-board and share D.

No. 15,137.—N. S. LOCKWOOD and J. D. WINN.—*Improvement in Ploughs.*—Patented June 17, 1856.

By this improvement no bolt-heads are exposed on the outer side of the mould-board, and the latter may be hardened so that it will retain its original shape.

Claim.—Welding the post A or breast A², to the mould-board B, and attaching the share C and land side C¹ to the mould-board and post, or “breast,” by means of the flanch A¹, at the lower end of the post or breast, and the plate C² of the share and land side, through which flanch and plate screw-bolts F F pass, substantially as shown for the purpose specified.

No. 15,344.—JOHN RICH.—*Improvement in Ploughs.*—Patented July 15, 1856.

The braces *g* and *h* proceed from the land side, curving backwards and upwards to sustain a piece extending back from the bed piece *b*. This piece carries upon its rear portion the after end of the beam, and contains in its substance the sockets *i* and *k* for the handles *l*. It will be perceived by the drawing that the sockets are cast without setting any cores.

Claim.—The sockets *i* and *k*, when arranged and combined with the body of the plough.

No. 15,321.—ALVIN BARTIN.—*Improvement in Ploughs.*—Patented July 15, 1856.

The nature of this invention consists in attaching the body A of a plough to the coulter B in such a manner, by means of bolts *a* and *d*, as to allow the body to be moved to the right or left, for a side-hill plough or reverse plough, and by confining the body to any desired angle with the beam by a cross-bar F and cam lever G attached to the hind end of the beam, and also by forming the lower end of the coulter into a wedge-shape on which to place a self-sharpening socket-point H, which can be reversed as it becomes worn, and replaced by another one when worn out.

Claim.—I claim jointing the upper and front points of the body of the plane to the coulter, the whole being arranged and operated substantially in the manner and for the purpose set forth.

No. 15,654.—BENAIHAH C. HOYT.—*Improvement in Ploughs.*—Patented September 2, 1856.

This plough can be used to turn one or two turrows, and can also be readily converted into a cultivator. To turn but one furrow, the point M is attached to standard A, and the beam D is placed on a line with the land side of the point M. To turn two furrows at the same time, the point represented in fig. 3 is attached to the standard, and the beam and handles are fastened on a line between the two mould-boards K. To convert the plough into a cultivator, the point represented in fig. 2 is fastened to the standard, the mould-boards K are removed by withdrawing the bolts *z* at the top end of the braces R¹ and N, and the short bolts P that pass through the mould-board K in the prongs X are also withdrawn.

Claim.—The adjustable rotary mould-board K K, combined with the beam D and frame R, the whole being arranged in the manner described.

No. 15,649.—JOSEPHUS P. HARRIS.—*Improvement in Ploughs.*—Patented September 2, 1856.

By shifting the bolts *b* to different holes in the hind brace B, and the end of the mould-board E to different notches in the front brace B, the mould-board can be moved in position so as to turn a furrow slice of variable thickness, while the sub-soil blade D continues at a constant depth, or the mould-board may be placed so as to constitute a continuation of said blade, and thus change the sub-soil into an ordinary plough.

Claim.—Combining with a sub-soil plough a mould-board, moveable to different heights, substantially in the manner and for the purposes specified.

No. 15,887.—SAMUEL A. KNOX.—*Improvement in Ploughs.*—Patented October 14, 1856.

This invention relates to a mode of constructing the form of a mould-board on geometrical principles, by means of arcs and straight lines, which are to be modified according to the nature of the soil in which the plough is to be used. An explanation of the rules of this method would take up too much space to be given here.

The inventor says: I do not claim the formula or rule by which the form of the working surface of the mould-board is determined or obtained, as I have only described such rule or formula as a mode of determining and defining the form which does constitute my invention, that it may be distinguished from all other forms of mould-boards known prior to my invention.

I *claim* the form of the working surface of the mould-board of ploughs, substantially such as described, and composed or combined of the several characteristic features specified.

No. 16,277.—JACOB HECKENDORN.—*Improvement in Ploughs.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim a reversible or self-sharpening point.

I *claim* the twisted, four-coultered, double-ended, and reversible self-sharpening point F F F F, as described, formed of one piece or casting, and operating as point and coulter, as specified.

No. 16,260.—JONATHAN ADAMS.—*Improvement in Ploughs*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The peculiar manner of holding the slotted mould-board, share, or hoe, to the stock A, viz: by means of the curved brace E, with its shank and shoulders extending from the beam B, and against and through the hoe and stock, as set forth.

No. 14,075.—WILLIAM E. WYCHE.—*Improvement in Cultivating Ploughs*. Patented January 8, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The arranging upon the share of the plough of one or more vertical cutters E, with a curved or inclined plate F at or near the rear outside of the share, for the purpose of dividing the furrow-slice vertically, and turning the outer portion towards the plough, as set forth.

No. 14,333.—WILLIAM E. WYCHE.—*Improvement in Cultivating Ploughs*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engravings.

The cutters arranged behind the shield are in such a position that a plane drawn to meet their edges would have the form of a mould-board.

The inventor says: I do not claim one or more cutters on the ordinary mould-board, or on the standard of a plough, with a mould-board on the opposite side, as these are not new.

But what I do *claim* is, substantially, a series of knives or cutting-blades D E on the standard, in the place or and for a mould-board, for dividing, cutting, and turning the furrow-slice horizontally, or nearly so, and depositing the pulverized soil mostly in the furrow, and turning the sod or turf upon the surface; and this I *claim*, whether said knives be made adjustable or otherwise, substantially as described.

No. 15,919.—EDMUND C. BILLS, jr.—*Apparatus for cleaning Coulters or Ploughs*.—Patented October 21, 1856.

The nature of this invention consists in suspending upon and in front of the coulter C, and above the cutting-edge of the same, an inverted ribbed cone D, capable of rotation by the pressure of grass against it, so as to carry off said grass laterally, and thus free the coulter from the grass.

The inventor says: I expressly disclaim smooth cones and cylinders, and those that are ribbed in the direction of their elements, as coulter

cleaners; I also disclaim the employment of mechanical devices for rotating such cleaners.

But I *claim* the employment upon the front of a coulter of an inverted cone, having spiral flanges thereon, self-acting by the upward pressure of the grass to free the coulter, substantially as set forth.

No. 14,287.—ABRAHAM MARQUISS, EZRA MARQUISS, CHARLES MARQUISS, and CHARLES EMERSON.—*Improvement in the Mole of Draining Ploughs*.—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventors say: We are aware that mole-ploughs for forming subterranean drains have been used, and therefore we wish it to be understood that we do not claim the principle of forming underground drains by the use of such implements.

But we *claim* the peculiar shape of the mole A, which enables its forward movement to form a subterranean perforation whose top and sides will be smoothly and densely compressed, and whose bottom will be left almost entirely uncompressed, substantially in the manner and for the purpose herein set forth. Also, the giving tail *a* of the mole such a shape and position that it will serve to close up the slit cut by the mole shank B in forming a perforation; and also serve to lead the mole upwards to the surface of the ground as soon as the beam E is allowed to turn on its axis, substantially as herein set forth.

No. 14,373.—AARON and THOMAS S. SMITH.—*Improvement in Gang Ploughs*.—Patented March 4, 1856.

Any number of shares may be used, and the front axle B may, by loosening the nut *e* on the bolt, be adjusted so that the shares will be in line with the centre of the axle.

Claim.—Combining the axle B and wheel J with the bed piece A, when constructed and arranged substantially in the manner and for the purpose set forth.

No. 15,039.—CYRUS GARRETT and THOMAS COLTMAN.—*Improvement in Sub-soil Ploughs*.—Patented June 3, 1856.

The cast-iron standard 3 is provided with a slot 6, in which a flat bolt passes up for the purpose of attaching the land side 2 to the beam. The bolt *g* serves to steady the land side. *s* represents a steel mould-board which is riveted to the flange 4 of the standard. Such a mould-board of wrought metal is capable of being placed on the plough at any required angle by bending it.

Claim.—The arrangement of the standard 3, flange 4, share 1, and mould-board 5, and these arranged with the brace-bar 9 and stay-bar 6, for purposes mentioned in the specification.

No. 14,810.—ABRAM HEULINGS.—*Improvement in Potato Diggers.*—Patented May 6, 1856.

The cutter F throws off the top of the ridge and cuts the tops loose from the roots, its inclined faces carrying them out of the way of the excavator. The excavator passes through the ridge and under the potatoes, which, as soon as they enter the scoop, are caught by the rakes and rapidly drawn up the open bed *e*, and discharged upon the reciprocating grating H, whence they pass into the receiver R. In their transit along bars *e* and *e*¹, the potatoes are separated from the earth.

The inventor says: I disclaim all systems of teeth or brushes which have radial positions upon revolving carriers at the time of action, whether they be upon an endless band, or on a cylinder, as in Schaffer's patent of 1853, as their action is altogether different from that of my construction.

But I do *claim* the combination of the excavator E and inclined open bed *e* with the series of rakes R¹, so connected with the endless carrier P that the rake-teeth will be projected to the front of the excavator, at or nearly at a right-angle to its surface, and have a motion of translation along the bottom of the same, previous to reaching the inclined bed.

No. 15,100.—AMOS L. GRINNELL and JOHN Z. WILLIAMS.—*Improvement in Potato Diggers.*—Patented June 10, 1856.

The implement is used in the following manner: The handles H are raised by two attendants, one being at each end of the frame A, and the two rakes G G will consequently be distended or forced apart. The rakes are then pressed into the ground, and by pressing upon the handles H the rakes are made to meet underneath the potatoes. The implement is then raised and shaken vertically till the earth falls between the teeth of the rakes, leaving the potatoes within them.

Claim.—The two rakes G G attached to the frames F F, the frames being hung on the shaft E, which is connected to the frame A, and the handles H of the frames passing through the side pieces of the frame A.

No. 15,628.—SILAS WOOLSON.—*Improvement in Potato Diggers.*—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The employment of an open concave digger, arranged and combined with a movable standard, as and for the purpose set forth.

No. 16,184.—WILLIAM MUSSEHL.—*Improvement in Potato Diggers.*—Patented December 9, 1856.

As the machine is drawn over the potato ground the mould-boards *m* catch the stalks and weeds and throw them on both sides of the furrow opened by shovel *f*. The shovel *f* by its progress carries the

soil with the potatoes upwards into the separator S, where, by the rotation of said separator, the earth is loosened from the potatoes, and falls out between the interstices of the wires, while the potatoes drop out at the rear end of the separator.

Claim.—The revolving separator S, in combination with the adjustable inclined shovel *f* and mould-boards *m*, arranged and operated in the manner and for the purpose set forth.

No. 14,097.—W. W. HARVEY.—*Improvement in Implements for Pruning Trees.*—Patented January 15, 1856.

The cutter, by pushing the handle F, is forced a sufficient distance into the limb of the tree to be cut off, so that it will be held in the cut, and the handle F and socket E is then drawn backwards and the upper end of the socket E is forced against the collar B, which blow will of course force the cutter still further into the limb. This operation is repeated until the limb is severed from the tree.

Claim.—Having the shank or bar C of the cutter or chisel A fitted within a socket E, attached to a proper handle F. The socket being allowed to work on a shank or bar, substantially as shown for the purpose specified.

No. 16,016.—PELLS MANNY.—*Improvement in Automatic Rakes for Reapers.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Pivoting the rake B, for curvilinear play over the platform, to the up and down moving lever or supporting beam D, arranged to operate together and separately at intervals in relation to the platform and each other, in the manner and for the purpose set forth.

No. 15,601.—CHARLES P. CARPENTER.—*Improvement in Hay Rakes.*—Patented August 26, 1856.

The horse by which the machine is drawn being attached to the loops in the forward ends of the tugs D D, and the machine being in position as represented in fig. 1, the hay will be caught by the teeth I, and collected. When the teeth are loaded with a sufficient quantity of hay to form a windrow, the driver releases the catch F from the handle, when, as the tractive power is applied to the movable head B, said head will be drawn up on the guide-rods C, until its motion is stopped by the links *n* coming in contact with the forward end of the brackets E, as represented in fig. 2, by which motion the hay is discharged.

The inventor says: I am aware that a rake has been constructed with a fixed head, (similar to the one which I employ,) into which spring steel teeth are inserted, and drawn by power applied to such

fixed head ; therefore, I do not claim such a rake head, nor such spring teeth.

Neither do I claim such a rake head, nor such spring teeth ; neither do I claim the wheels or the handles by which said rake is guided, nor the arms K K ; neither do I claim the tug (attached to such a fixed head) of itself alone ; but I *claim* the slotted bed-plank A, the movable head B, the guide-rods C C, the catch F, and the connecting of the tugs D D to the brackets E E by the links *n n*, or their equivalent device or devices, arranged as described and for the purposes set forth.

No. 15,653.—HANKLES HEABERLIN.—*Improvement in Hay Rakes.*—Patented September 2, 1856.

When it is required to discharge the load from the rake teeth, then the operator from his seat E tilts the lever G, which swings together with frame Q and spring bow V on pivot *b*. By this motion the rake-teeth are released from the pressure of the foot *g*, the rake revolves and discharges its load. By letting down the lever G, the rake will resume its former position and be ready for raking another wind-row.

Claim.—The combination of the revolving rake with the adjustable spring bow V, so that said rake may be set to trip, and be tripped with such variable motion of the foot *g* as may be desired ; the whole being arranged and operating in the manner and for the purpose set forth.

No. 15,777.—ISAAC J. ROBBINS.—*Improvement in Hay Rakes.*—Patented September 23, 1856.

When this machine is in operation, the hinged arms D rest on the horizontal bar J, and the blocks *a*, by operating the lever G, have been slid so as to prevent the teeth E from turning ; by withdrawing the blocks *a*, by means of the lever G, the teeth E are caused to revolve. When it is required to draw the machine over the ground without the teeth E being in contact with the same, this can be accomplished by operating lever I, rod *i*, and lever *h*, as represented in fig. 2.

Claim.—I do not claim, exclusively, the use of independent teeth for horse-rakes ; the same having been described in the patent granted to Calvin Delano, February 7, 1849.

Neither do I claim the exclusive use of revolving teeth for horse-rakes.

But I *claim* the hinged arms D D, with their revolving teeth E E, in combination with the sliding-blocks *a a* ; the whole being constructed substantially in the manner and for the purpose specified.

No. 16,025.—THOMAS R. ROACH.—*Improvement in Hay Rakes.*—Patented November 4, 1856.

The object of this invention is to make a revolving rake, the teeth of which, by rising and falling vertically at their points independently of each other, can accommodate themselves to any unevenness of the surface over which they pass, and thus gather the hay or grain much

better than can be done by the ordinary revolving rake. The rake-teeth *B* are fitted at their short end in a cast-iron socket *b*, and can vibrate on the pins *c*; the India-rubber strips *e* are placed between the ends *a* and the socket *b*, and the latter is entered in the mortise of the bar *A* and fastened by screw *g*.

Claim.—The springs above and below the teeth, operating in the manner and for the purpose substantially as set forth.

No. 16,318.—JOHN J. SQUIRE.—*Improvement in Hay Rakes.*—Patented December 23, 1856.

If it is desired to raise the arms *G* so that the rake *M* shall discharge its load, the driver on seat *A* moves lever *B* forward, which, turning on fulcrum *a*, throws clutch *D* in gear with wheel *N*, and causes shaft *L* to turn with the wheels, so that the arms *C*, with their attachments *J* and *K*, are raised. The arms *C* having been lifted sufficiently to discharge the load on the rake, the chain on the lever *F* draws lever *B* back to its former position, detaching clutch *D*, and allowing the rake to drop to the ground.

Claim.—The clutch and levers, operating the same in combination with the arm *F* of the rake-shaft, and the connexion between said arm and lever *B*, whereby the rake is lifted by the moving power, and automatically released, substantially as specified.

No. 14,321.—NATHAN MARTZ.—*Improvement in Horse Rakes.*—Patented February 26, 1856.

Very slight lifting power applied to handle *H* or foot-treadle *L* will raise the rake from the ground and disencumber it of the hay it may have gathered.

Claim.—The combination of the coiled spring *S*, axle *B*, rock-shaft *E*, and rake-teeth *T*, when arranged in the manner and for the purpose herein described.

No. 14,067.—RANDAL PRATT.—*Improvement in Horse Hay-Rakes.*—Patented January 8, 1856.

The rake being put in motion, the teeth *D D* proceed to gather up the hay. The rake being full, the operator, standing upon the board *T*, applies his foot to *H*, and simultaneously the teeth are raised from the ground, and the prongs *F* brought down upon the contents of the teeth, which are thus cleared, and made ready to renew the operation.

Claim.—Hanging the prongs or clearers *F F* so that they can vibrate, and connecting them to the devices which operate the teeth, so that they will vibrate in an opposite direction simultaneously with the teeth, to clear them of the crop gathered, and press it together on the ground, as set forth.

No. 16,156.—JESSE WHITEHEAD.—*Improvement in Self-acting Rakes for Harvesting Machines*.—Patented December 2, 1856.

As the machine is moved along, the driving-wheel B imparts a reciprocating motion to the pulley N, by the arrangement of crank-pin *a*, pitman *b*, lever *c*, shaft *d*, toothed sector K, and pinion L. The rope P, which passes over the pulleys N and O, is fastened at both ends to the rake-head H of the rake J. By this arrangement, the rake J rakes the grain towards the rake I, when both rakes, holding the grain between them, pass over the movable cam S, and thence over the stationary cam R, and deposit the gavel behind the platform, when both rakes recede into the position represented in the engraving.

Claim.—The combination of the rakes I J and rod F, when said parts are made to operate together, and independently of each other, substantially as described.

Also, in combination with the rakes and rod F, the permanent cam R, and yielding cam S, which causes said rakes to advance in one line and return in another line, as set forth.

Also, in combination with the rake-head H, the rod *g* having its support alternately in Q *h*, for the purpose of preventing said rake-head from binding on its ways, as set forth.

And, finally, giving the rake I a movement varying to the size of each and every gavel as set forth.

No. 16,145.—STEPHEN R. HUNTER.—*Improved Raking Apparatus for Harvesters*.—Patented December 2, 1856.

As the machine is drawn along, the grain is cut by the rotating cutters C, and passes between the two cutters and upon the endless apron I, by which it is conveyed by the side of bar J. The bar J, every time the projecting plate *l* passes through the box M, is moved outward to the edge of said plate, and forces the cut grain therefrom; the ball *k* is raised to the top of box M by the plate, and the chain *j*, to which the ball is attached, draws the bar J to the edge of the plate, as represented in dotted lines in fig. 2. As soon as the ball is freed from the plate *l*, the bar J is forced back to its original position by spring L.

The inventor says: I do not claim the rotating cutters C C and the hinged or jointed plates A A; for they have been previously used, and were formerly patented by me.

But I *claim* the bar J attached or hinged to the arm K, on the platform H, and operated by the spring L, chain *j*, ball *k*, which is fitted in the box M, and the plate *l n*, the wheel G, when the parts are arranged to operate in combination with rotary cutters C C, and endless apron I, as described, for the purpose set forth.

No. 15,237.—JOHN C. HICKS.—*Improvement in Raking Attachment to Reapers*.—Patented July 1, 1856.

The shaft L being rotated in any proper manner from the driving-wheel, the rack J will be moved back and forth by means of crank K.

When the rack is forced outward, the rake G will be drawn inwards over the platform A, and the grain will be clasped between the rake G and holding rake O; the crank K will then turn the rake J and shaft B, with the two rakes G O, around; the crank then draws the rack J inwards, and the rake G is thrown outward, as shown in dotted lines fig 2, the grain falling from between the two rakes upon the ground. The rake G, when thus extended, is turned around, the crank K again turning the shaft B, and the rake G is drawn inwards as before.

The inventor says: I do not claim the general construction and operation of the above described raking attachment, for I am aware that the same has been accomplished before.

But I *claim* operating the rakes G and O by means of the segment H and rack J, with pin C attached, in combination with slotted arm or crank K, and groove *e* in platform P, when arranged and operated in the manner and for the purpose set forth.

No. 15,046.—JOSEPH SMITH.—*Improvement in Machines for Raking and Loading Hay*.—Patented June 3, 1856.

As the rakes rise to the place of discharge, the rake-teeth *v* force out a guard plate *S*¹, secured to arms *g g*; and when the rake has passed it, this plate springs back under the rake, and prevents the loose hay from falling on the ground behind the wagon. Below this spring guard-plate *S*¹ is a stationary plate *S*², which keeps the hay on the wagon. After the rake passes this guard *S*¹, it raises one arm of the trip-dog *v*²; the other arm *u*¹ being connected with the fork, brings it directly over the rake *S*; now the teeth of the fork, being of a V shape, gather the hay, and as the rake rises it forces the fork back by means of projecting piece *r*¹, so as to drop the hay directly on the wagon, and the next rake draws the fork back for another supply of hay.

Claim.—The spring guard-plate *S* operated by the rake.

No. 14,538.—D. H. THOMPSON.—*Improvement in Machines for Raking and Loading Hay*.—Patented March 25, 1856.

When the rake *D*¹ is thrown forward, the cams *o* will act upon the levers *K*, and the rake *F* will grasp the hay and bring it between the teeth *n* of the rake *G* and the front end of the body *A*. When the cams *o* pass the inner lever *k*, the upper end of the same lever will act upon arm *n*, and cause the teeth *m* to take hold of the hay. When a succeeding quantity is brought upward, the previous quantity will be thrown into the body *A*.

Claim.—The combination of levers *K* with rakes *F* and *G*, when operated substantially as shown, for the purpose specified.

No. 15,174.—OWEN DORSEY. *Improvement in Reapers*.—Patented June 24, 1856.

To the outer end of the driving-shaft *E* there is attached a crank-pulley *G* having a pitman *H* connected to it, said pitman being attached

to an arm I at the upper end of a vertical shaft J on the frame A. The lower end of the shaft J has an arm K attached to it, said arm being pivoted to a pitman L which is attached to the cutter bar M. By this arrangement four vibrations or strokes of the sickle are obtained at every revolution of the crank-pulley G; for arm K and pitman L form a toggle which gives a double movement, or increases the movement of the sickle one half more than the usual direct connexion by a pitman attached to the sickle and crank-pulley.

The inventor says: I do not claim the raking attachment, for that was formerly patented by me.

But I *claim* driving the sickle, or communicating motion thereto, by means of the crank-pulley G, pitman H, arms I K L, and shaft J, arranged as shown, whereby four vibrations of the sickle are obtained at every revolution of the crank-pulley G.

No. 15,655.—M. G. HUBBARD.—*Improved Raking-Attachment for Reapers*.—Patented September 2, 1856.

As the pulley C is rotated, the part *c* of the rake being fitted in said pulley, the rake-bar B will be vibrated upon the upright *f*, the teeth *a* being down upon the platform A, and swept over the platform, while the inner end of part *c* is passing over the axis of pulley C, and the teeth raised and passed over to the front end of the platform and depressed, while the inner end of part *c* is passing underneath the axis of of said pulley.

Claim.—The jointed rake-bar B, attached to the upright *f*, and connected with the pulley *c*, as described, for the purpose set forth.

No. 15,096.—GEORGE W. N. YOST.—*Improvement in Reaping and Mowing Machines*.—Patented June 10, 1856.

After the projection *h*¹ on the cam H makes one passage or the horizontal line through the centre of the cam, having carried the yoke J, and at the same time the cutters, to one extreme of their stroke, it revolves without touching the yoke until it acts against the other side, when the yoke, and consequently the cutters, are suddenly carried in the opposite direction. Thus, the cutters E at each end of the stroke remain for a time stationary, and, when moved, traverse the space between the fingers B, partly cutting the grain intervening, and partly pushing it towards the stationary cutters D, against which it chops it off with what may be called a shear and chop blow.

The inventor says: I do not claim giving an abrupt and intermittent reciprocating motion to the cutter-bar of grain and grass harvesters.

But I *claim* the above described operating mechanism, or its equivalent, to produce an abrupt and intermittent reciprocating motion, in combination with the inclined-edged cutters D and the straight-edged cutters E, whereby I obtain the shear and chop blow, substantially as and for the purpose above set forth.

No. 15,252.—JOHN REILY.—*Improvement in Reaping and Mowing Machines*.—Patented July 1, 1856.

The object of hinging the standards L of the raker's seat M is to keep it in an upright position and to prevent vibration, as the drag-tongue J would, if not hinged to them, press it forward, causing it to describe the arc of a circle when the cutter-bar A is raised, &c ; the pivoting of the end of the brace at the axis of motion allows it to compensate for the motion of the machine, the distance of the seat to this axis being under all circumstances the same.

The manner of raising the cutter-bar A will be well understood by the engravings.

Claim.—1st. The method of raising and lowering the cutter-bar A, either from the driver's or raker's seat or from both simultaneously, by means of the rod *u* and lever *x*, in combination with the lever X, substantially as described.

2d. Hinging the driver's seat M to the drag-tongue J, when combined with a brace N, pivoted at *i*, to the axis of motion of the machine, substantially in the manner and for the purposes described.

No. 15,796.—WILLIAM P. WOOD, assignor to SAMUEL DE VAUGHAN and WILLIAM P. WOOD.—*Improvement in Reaping and Mowing Machines*.—Patented September 23, 1856.

This invention consists in the manner of combining with a main frame H, rigidly supported at its forward end by a pair of truck-wheels P to prevent the oscillation of the driver's seat and to relieve the horses' necks from the strain exerted upon them in raising the cutter-bar, a balanced frame A, for the support of the platform and cutting apparatus mounted upon two independent wheels O and B in a line with and in rear of the axis of the driving-wheel, and of equal diameter, so that when the cutter-bar is raised it will rise evenly or in a line parallel with the surface of the ground, and in connexion with the lever Q that raises the machine, it having its fulcrum upon the main frame ; the finger-bar can be raised or lowered without throwing any strain upon the tongue of the machine. As the frame to which the cutter-bar is secured is not mounted upon the axis of the driving-wheel, it will be apparent that the teeth on the driving-wheel must be cut at a peculiar angle, as represented in the illustration, to operate the knives.

The inventor says: I do not claim a balance-frame supported and turning upon an axis of motion, independent of the axis of motion of the driving-wheel, of itself.

But I *claim* a balance-frame A supported and turning upon an axis of motion back of the axis of the driving-wheel, when used in connexion with angular or oval-shaped gearing, or its equivalent, and the bifurcated stanchion-brace Q, in combination with a main frame H, rigidly supported at its forward end upon a truck-carriage I or wheels, the whole being constructed, arranged, and operated in the manner substantially as described.

No. 16,251.—DANIEL C. SMITH.—*Improvement in Reaping and Mowing Machines.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The combination of rock-shaft H with hollow rock-shaft K, when the same are connected for joint operation in moving two sickles at once, by means of mechanism described, and arranged and operated, in relation to each other, from main wheel A, as set forth.

No. 16,258.—THOMAS D. BURRALL.—*Improvement in Reaping and Mowing Machines.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the cutter-bar, cutters, or guards in themselves as these are well known.

Neither do I claim bringing a notched or turned edge in contact with the lower side of the vibrating cutters, as this has been used when the stationary cutters were made in one piece of sheet metal, and said metal folded over to serve as a finger-board; but I am not aware that the finger-board has before been formed with a continuous lip or rib, at the front edge, coinciding, or nearly so, with the front edge of the vibrating cutter-bar, when free space is allowed below and behind said cutter-bar for any extraneous substance to free itself, and pass away with the grass or grain to the rear of said finger-board, as the machine advances.

I claim placing the front edge of the cutter-bar *c* on the line, or nearly so, of the front edge of the finger-board *a*, when said finger-board is formed with the raised front edge or lip *e*, leaving free space below and behind the cutter-bar for any extraneous substance to escape from beneath said cutter-bar and pass freely away to the rear with grass or grain, as specified.

No. 14,781.—PLINY THAYER.—*Improvement in Reaping Machines.*—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—In combination with the raker's stand C and the usual platform B for receiving the cut grain, the rearward inclination and extension of said platform from the line *a*, so that the raker may move his rake with the natural sweep of his arms or body, in raking the gavel from the platform, and deliver it clear of the gearing.

No. 15,044.—JACOB J. MANN and H. F. MANN.—*Improvement in Reaping Machines.*—Patented June 3, 1856.

When the grain is cut and has fallen upon the apron E, this being by means of the bar G and strip *e* brought close up to the cutter-bar.

the butts are not retarded by friction, but are carried up by the slats or cleats *c* on the apron, while the heads, which, being generally the heaviest, naturally hug the apron closest, and would, were it not for the bar *H*, be carried up first, are somewhat retarded by friction against said bar, upon which they fall to some extent. Thus the effect otherwise resulting from the difference of weight in the heads and butts of grain is counteracted, and it is delivered in a straight and even manner to the action of the revolving-rake *J*, which divides it into gavels.

Claim.—The combination of the bar or plate *H*, or of other equivalent device at the back of the apron, with the strip *c* beneath the apron, and the bar or plate *G* upon the finger-bar, under which the said strip *c*, and over which the apron extends, or with other equivalent device, substantially as and for the purpose above set forth and described.

No. 16,183.—M. G. HUBBARD.—*Improvement in Teeth for Reaping Machines.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings, in which figure 1 represents a perspective view of the tooth; figure 2 the upper side, and figure 3 the under side of the core to be used in casting the tooth; figure 4, core-box, the upper part *y* being removed.

Claim.—Forming a tooth, substantially as described, by constructing the core thereof, in the manner set forth, and for the purposes specified.

No. 14,673.—W. J. MCINTOSH.—*Improved Implement for Reaping Rice.*—Patented April 15, 1856.

The arm *B* terminates to a sickle-blade *D*, working between two guide-plates *E F*, the lowest one of which plates *F* has a sharp edge, so as to operate upon the standing rice, in combination with the blade *D*. The wire *G* answers the purpose of bending the stalk over the edge of plate *E* towards a horizontal position, so as to deposit the cut rice upon the cradle *G*¹. A slider *I*, provided with an arm *K* and spring *L*, is made to traverse the length of the cradle backwards and forwards in order to push the rice over the edge *P* on the stubble.

Claim.—The cutters *D F*, in combination with the wire *G* and the cradle and slides *G I*, or their equivalents, for the purposes set forth.

No. 14,540.—A. W. WASHBURN.—*Improvement in Cotton Scrapers.*—Patented March 25, 1856.

The frame rests upon the axles *K L*, which are combined with the wheels *E E*¹ and *F F* in such a manner that they can be secured in any desired position by means of the set screws *t t*. The peripheries of the wheels are bevelled for the purpose of adapting them to the shape of the sides of the cotton plant ridges. The cutter *G* is fastened to the end

of a lever C which is vibrated by means of the pins *t* and plate *m*. The forward pair of ploughs H H perform the operation of barring off the base of a ridge; the scrapers I I shave off the sides of the ridges, and the cutter G performs the operation of bunching the cotton plants.

Claim.—The bevel wheels for supporting and guiding the machine, when they are arranged in combination with the side scrapers I I, and the thinning-out cutter G, or either of them, substantially in the manner and for the purpose herein set forth.

No. 14,543.—THOMAS C. BALL, assignor to NATHANIEL LAMSON.—*Improvement in Scythe Fastening.*—Patented March 25, 1856.

The shank S is inserted between plate B and ring C upon notch *b*. The cylinder E is thus placed between S and B, (as shown in fig. 1,) and turned, thus causing the cylinder to extend its greater diameter between S and B.

Claim.—The cylinder E constructed, arranged and operating substantially as set forth.

No. 14,842.—DENISON W. GREEN, assignor to himself and ARETAS FERRY.—*Improvement in Scythe Fastening.*—Patented May 6, 1856.

When the cam-lever G is turned around, so as to project beyond the end of the snath, the shank of the scythe-blade may readily be passed through the binding stirrup E and have its stud or projection fixed in its recess in the bed D. The cam-lever is next to be turned around so as not only to carry its cam *e* against the wedge, but its long arm *f* close up to the handle or snath A. By this action of the cam against the wedge F, the stirrup will be drawn down close upon the shank *a* of the blade, and will force said shank against the bed-piece D so as to confine the blade to the snath.

Claim.—The combination of the adjustable wedge F and cam-lever G, as applied to the binding stirrup E and snath A, as arranged and made to operate therewith, substantially as specified.

No. 15,849.—DAVID ALLEN GOODNOW.—*Improvement in attaching Scythes to Snaths.*—Patented October 7, 1856.

By operating the screw D, the dog E, and the end of the shank of the scythe, which fits into a notch of dog E, can be adjusted to suit the convenience of the operator.

Claim.—The screw D and dog E, in combination with the projection C, the whole being arranged in the manner and for the purpose described.

No. 15,194.—SILAS G. RANDALL.—*Improvement in Hand Seeding Machines.*—Patented June 24, 1856.

When the lever J is in the position shown in fig. 1 the seed-slide E is down at its lowest position, entirely filling up the sheath B; said slide

is also in that position locked, by means of its shoulder *e* passing under the guide *G*, it being forced there by the spring *f*. In this position the tongue and sheath may be forced into the ground by the bar *A* alone.

Claim.—In combination with the reciprocating motion of the seed-slide *E*, the locking and unlocking of it at each planting operation, so that the tongue shall be firmly held against the resistance of the earth in forcing it and the sheath therein.

No. 14,073.—JOHN S. SNYDER.—*Improvement in Seeding Machines.*—Patented January 8, 1856.

The nature of this improvement will be understood from the claims and engraving.

The inventor says: I *claim* the so arranging of the openings in the seeding-plates *h g* that the machine can be converted from a drilling to a hill-planting one, or *vice versa*, by changing the running direction of the movable plate, as herein set forth. (See arrows 1 and 2.)

2d. I do not claim a secondary box or receptacle for the excess of grain; but I *claim* as an improvement upon the machine of Snyder & Young, patented 28th February, 1854, viz: the arrangement of the convex seeding-plate *h*, segmental opening *L*, and seed receptacle or drawer *M*, for admitting of the location of said drawer outside of the hopper and in more convenient position for the attendant, as set forth.

No. 14,284.—STEPHEN GORSUCH.—*Improvement in Seeding Machines.*—Patented February 19, 1856.

By employing the screens *I J* the operator is enabled to see the seed as it passes down; and if the spout becomes choked, it will be detected at once.

The inventor says: I do not claim the distributing device, for the same plan is well known and in common use; but what I do *claim*, is placing the screws *I J* in the conveying tube or spout *G*, the front and back sides of the tube or spout being open, substantially as described for the purpose specified.

No. 14,450.—JOHN GERMAN and C. B. HOYT.—*Improvement in Seeding Machines.*—Patented March 18, 1856.

The nature of this invention will be understood from the claim and engravings.

We do not claim the reciprocating slide *D*, nor operating said slide by an elbow lever and pins attached to the wheels *B*; but we *claim* having the elbow lever *G* upon a screw rod *H*, so that said lever may be moved in and out of line with a portion or all the pins *a* on the wheel *B*, for the purpose of causing the slide *D* to be operated faster or slower, or to remain stationary, as described.

No. 14,703.—THOMAS A. RISHER, assignor to Himself and I. K. COOPER.—*Improvement in Seeding Machines*.—Patented April 15, 1856.

By operating the right and left screw D the plates a a^1 are either drawn towards each other, or the spaces between the plates a and a^1 are increased. The reciprocating slides H are provided with apertures n , through which the seed is discharged; g are apertures in the bottom F of the hopper, through which the seed passes to the slides.

Claim.—Bars A A^1 and plates a a^1 , in combination with the reciprocating slides H, and the double-holed bottom F; the whole being constructed in the manner and for the purpose described.

No. 14,707.—GEORGE I. BITLER.—*Improvement in Seeding Machines*.—Patented April 22, 1856.

The pulley K may be fitted more or less eccentrically on the shaft F, so as to give a greater or less length of stroke to the slide H. The discharge of seed is regulated by adjusting the slide H by means of arm J and notches g . The adjusting plate I serves to bring the apertures d in proper relative position with the apertures c b .

The inventor says: I do not claim a perforated reciprocating slide H, for it has been previously used; but I *claim* the reciprocating slide H, having different sized holes c made through it, in combination with the adjustable bottom G^1 and adjustable plate I; said slide H being also arranged in combination with and operated by the pulley K, substantially as shown, for the purpose specified.

No. 14,894.—HOSEA WILLARD.—*Improvement in Seed Machines*.—Patented May 13, 1856.

The seed to be sown is placed within the frames or screens J J, and as the implement is drawn along, the screens will rotate; the seed will pass through the screens or sieves e , and will fall upon the inclined board or plate K, and thence upon the ground. The teeth on the cylinders G harrow the seed into the soil; and as these cylinders rotate in a reverse direction to the wheels B, their motion may be quite slow compared with that which would be required provided they rotated in the same direction as the wheels B.

Claim.—The rotating cylindrical frames or screens J J, in combination with the inclined board or plate K, with pivoted cleats K^1 attached for the purpose of distributing the seed, and the cylinders or rollers G G, having teeth c or shares d attached to their peripheries.

No. 15,104.—C. O. LUCE.—*Improvement in Seeding Machines*.—Patented June 10, 1856.

As the machine is drawn along, a reciprocating motion is given to the slides or valves N N, O O. When the apertures h in the upper

sides are in line with the tubes L L, the seed will pass through the apertures in the upper slides and down upon the lower slides O O, the apertures *i* of which, are out of line with the tube L L; and when the apertures *h* in the upper slides are thrown out of line with the tubes L L, the apertures *i* in the lower slides are brought into line with them, and the seed passes through the apertures *i* into the spaces formed by the plates *e* in the wheels I I, and is thrown from them by centrifugal force.

The inventor says: I do not claim separately the distributing wheels I I, for they have been previously used.

But I *claim* the distributing wheels I I, in combination with the slides or valves N N, O O, arranged and operating as shown, for the purpose specified.

No. 16,219.—MOSES D. WELLS.—*Improvement in Seeding Machines.*—
Patented December 9, 1856.

The reciprocation of rod D produces the vibration of agitators B sufficient to produce the discharge without the risk of the moving parts being choked by seed. As the seed leaves the discharge opening it falls upon the scatterer E, and thence drops to the ground.

The inventor says: I make no claim to the use of reciprocating bars for causing the movement of either rigid or elastic clearers and discharge apertures of seed planters.

But I *claim* the combination of the case with the swinging protruding agitators thereof, and the reciprocating bar contained within the case and actuating the vibrating agitators, substantially as and for the purposes set forth.

No. 16,209.—JAMES M. KERN.—*Improvement in Seeding Machines.*—
Patented December 9, 1856.

For sowing coarse and fine seed, or seed and fertilizers, at the same time, the centre-board E is secured by means of key-slide F in the position drawn in full lines. The compartments B and C being respectively filled with fine and coarse seed, motion is imparted to the agitators *d* and *n* by vibrating lever L, and the fine seed will pass through the passages *m*, and the coarse seed through the passages *h*. If it is desired to sow fine or coarse seed only, then the slide F is withdrawn, and the centre-board E turned to one or the other side, as represented in dotted lines.

Claim.—Combining with a seed-box provided with a double set of passages, substantially as described, a hinged centre-board, for the purpose of sowing both small and coarse grain separately, or both at the same time, or grain and fertilizers, as set forth.

No. 16,195.—ANSON THOMPSON.—*Improvement in Implements for Rolling Seeds in the Earth.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim separately either a jointed roller-frame, or two sets of rollers with the one set in advance of the other, and the rear set following in the spaces untrodden by the forward set; neither do I claim a roller made up of a series of wheels, arranged parallel to each other, at a suitable distance apart, and hung so as to rotate separately of each other; but I *claim* the combination with the two series of separately revolving wheels or narrow rollers *b b*, arranged (the several rollers and each series) relatively to each other, as specified, and of the frames *A A* constructed of slats *c*, arranged as described, for operation, in connexion with the wheels, as set forth.

No. 14,570.—THOMAS E. MARABLE.—*Improved Machine for Gathering Seeds or Grain in the Field*.—Patented April 1, 1856.

A represents a receptacle for receiving the seeds to be gathered. The projections *a a* on shaft *E* acting upon lever *F* impart to the rubber *H* a transverse rubbing motion over the stationary board *I*, while the cams *e e e e* on the axle *J*, together with levers *f f*, cause said rubber to rise and fall. The rubbing board *I* consists of a series of slats *h*, through which the seeds pass when rubbed out, and, falling upon an inclined board *K*, are directed into the receiving box *A*.

As it is necessary for the reel to deliver the heads at the exact time that the board *H* is raised, it should be geared to the driving axle *J*.

Claim.—In combination with a gatherer for drawing in the heads, the rubbing board having a vertical movement for receiving the heads under it, and then dropping down and having a transverse rubbing motion for rubbing out the seeds or grain, as herein described.

No. 14,517.—CYRUS ROBERTS and JOHN COX.—*Improvement in Grain Separators*.—Patented March 25, 1856.

A represents the frame which supports the threshing cylinder *B*, the winnowing apparatus *C*, and a conveyor and separator between *B* and *C*. The conveyor is suspended by the two radius bars *L*, and receives motion by means of rod *D* and crank *E* on shaft *E*¹. The connexion of the bars *L* with the crank *E* is such as to cause the bars to rise during the forward motion of the conveyor. The fingers *f* are secured to a head *g*, which turns on journals confined in boxes on each side of the bottom. One end of the head of each set of fingers has an arm *N*, which is connected with an adjustable guide *O O*¹ secured to the frame. The motions caused by this arrangement, together with the divergency of the bars, will agitate the straw thoroughly, so as to leave but little, if any, loose grain in it. The winnower *C* is provided with an adjustable tail-spout *P* for the purpose of catching the unthreshed heads and delivering them into a receiver at the side of the machine.

Claim.—1st. The method of facilitating the separation of the grain from the straw by means of diverging bars *I*, substantially as herein described.

2d. Constructing the rear portion of conveyor with a solid ridged

bottom, in such manner as to form a series of diverging channels K to spread the grain preparatory to delivering it to the winnower C, as herein set forth.

3d. The employment of shaking fingers *f*, arranged and operating in such manner that they will rise on the forward movement of the conveyor, and thus lift and shake the straw as it is thrown forward, in combination with the carrying bars, whereby certain advantages are attained, as herein set forth.

4th. The arrangement of shaking fingers *h* in recess M in the bottom of the conveyor, in such manner that they can be alternately protruded above and retracted below the carrying bars, to shake the straw thoroughly, and at the same time not interfere with its conveyance, as herein described.

5th. The adjustable turning tail-spout P, arranged substantially in the manner and for the purposes herein set forth.

No. 15,948.—J. V. JENKINS.—*Improvement in Machines for Shearing Sheep*.—Patented October 21, 1856.

As the shaft G is rotated, rotary motion will be communicated to the shaft *e*, by means of the compensating shaft composed of shaft F and tube E, and by means of the universal joints *g* and *h*. The cam *d* on shaft *e* will cause the plate D to vibrate, and the teeth *f*, as they pass over the fingers *a*, cut the article which passes between them. The tool is moved along by hand by means of the handle J, and may be moved in either direction. The socket B protects the hand from the lower universal joint *g*.

Claim.—Operating the lever or plate D, by means of the eccentric *d* upon the shaft *e*, said shaft being connected by a universal joint *g* to the compensating shaft formed of the tube E and rod F, the rod being connected to the driving shaft G by a universal joint *h*, as shown and described.

No. 14,354.—LUTHER B. FISHER.—*Improvement in Machines for Shearing Sheep*.—Patented March 4, 1856.

The nature of this improvement consists in a series of bars or braces *f, g, h, i, &c.*, so combined with a spring which comes within the grasp of the hand as to increase the motion, doing away with the necessity of complex gearing.

The inventor says: I am aware a sheep-shearing machine has been devised, in which a combination of racks, pinions, pawls, spur-wheels, &c., are used for vibrating the cutters. I do not, therefore, lay any claim to such a machine; but I *claim* so constructing the shears that the mere claspings of the hand, or operating of the fingers, in which the shears are held and controlled, shall produce a multiplied motion of the cutters; and this I claim, whether said multiplied motion be produced through the jointed levers herein described, or their equivalents.

No. 14,840.—ROBERT M. WILDER.—*Improvement in Sheep-Shears.*—Patented May 6, 1856.

By moving the handle A in the same manner as the ordinary spring-handle shears, the machinery is set in motion, giving a circular motion to cutter G.

The inventor says: I do not claim operating the shears by the grasp of the hand, as this has been done; but I *claim* the rotary cutter, in combination with the spring-handle A, coupling-rods B, levers C, spring-pawls D, spur-wheel F, and wheels connecting spur-wheel with cutter wheel, or equivalents thereof, arranged and operating substantially as and for the purposes set forth.

No. 16,264.—WM. W. BRYAN.—*Improved mode of securing Braces in the Snath of a Grain-Cradle.*—Patented December 23, 1856.

The braces of the fingers where they pass through the snath, are secured in said snath by means of the wedge-formed pins C, as represented in the engraving.

Claim.—I do not claim the form or construction of the bolt, separately considered.

I claim the application of a wedge-formed bolt or pin, in the manner and for the purpose set forth and described.

No. 14,629.—JESSE LINCOLN.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented April 8, 1856.

The teeth *i i*, on the hub of one of the wheels, and the spring *n*, in combination with the rod J and arm I, give the roller H a rocking motion, that causes the slots *c c* to enter the hopper G, to receive and discharge the grain.

The slide L serves to regulate the size of the openings in the bottom of the hopper.

Claim.—In combination with the hopper G the seeding roller H, provided with open cells *c* passing through it, and rocked through the hopper to receive and discharge the grain broadcast, substantially in the manner described.

No. 14,274.—EDWARD F. BERRY.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The perforated sowing cylinder C, and the secondary internal perforated distributing cylinder I², connected with the hopper G at its centre by the tubes I I, with its central portion or tube enlarged, so as to distribute the seed evenly to the whole length of the lower portion of the sowing cylinder, in order that the seed may be cast or sown evenly broadcast over the soil, essentially in the manner and for the purpose fully set forth.

No. 14,630.—PETER LAWRENSON.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented April 8, 1856.

As the carriage is drawn forward, the feed-screw brush-wheel G revolves, and the screw L feeds out the seed from the hopper A through the opening D into the fan case C, where it is operated upon by the brush wheel and discharged by the blast of the fan E through the opening F. The vanes H prevent the seed from being scattered to too great an extent.

Claim.—The employment of a fan blower in connexion with a brush wheel, and in proper relation to the discharge of a seed hopper, substantially as and for the purpose set forth.

No. 14,837.—ENOS SRIMSON.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented May 6, 1856.

As the machine is drawn along, the hollow arm or tube F will be rotated by means of the gearing as shown, and the grain in the hopper A will pass down through the tube *d* into the hollow tube F, and will be thrown out by centrifugal force. The valves L are kept closed by springs *e*¹, while the ends of the arms are passing round one half of its revolution at the front of the machine; but as they perform the other half revolution, the friction rollers *h* pass into the recess *i* in plate M, which recess acts like a cam, and the valves are thereby opened and the seed thrown out.

Claim.—The rotating horizontal arm or tube F, provided with valves L at its ends, and used in connexion with the adjustable board or plate M provided with the semi-circular recess *i*; the above parts being constructed, arranged, and operating substantially as shown, for the purpose specified.

No. 16,322.—E. K. HAYNES, assignor to A. M. MOORE, and N. H. and E. K. HAYNES.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented December 23, 1856.

As the machine is drawn along, the shaft B is caused to revolve, and the upper end of it agitates the seed in hopper G, which then drops through the passages *a* down on the scattering wheel A, which also revolves with shaft B, and the grain is scattered by the action of the fan-wings *i* and the oblique directing boards *n*.

Claim.—The scattering-wheel, armed with air-agitating wings, when located between obliquely arranged parallel directing boards *n n*, for the purpose substantially as set forth.

No. 16,007.—ORMROD C. EVANS.—*Improvement in Spading Machines.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of a series of forks or spade blades *m* with

an endless chain L, and with a drum I and rollers K, arranged in such an order upon a carriage, that, by the progressive onward motion of the machine, the said spades or forks will first be forced by a direct or nearly direct thrust into the ground, and afterwards, in the act of being lifted by the chain out of the ground, shall be made to turn at such short angle with the surface as will cause the breaking and upheaval of the ground, substantially as described.

No. 15,171.—WILLIAM CROASDALE.—*Improvement in Lime and Guano Spreaders*.—Patented June 24, 1856.

There are notches *k* in the circular ends of the cylinder B into which the movable strips S are forced by rubbers M, so that the part of the cylinder B which is brought in contact with the hopper (not shown in the engraving) may have its movable strips so depressed as to form a cavity of any required depth, and thus admit the proper quantity of the material to be spread. When the cylinder B is turned, the movable strips S are freed from the pressure of the rubbers M, and forced out again by the springs G.

Claim.—The combination of the cylinder B, composed in part of the movable strips S, with the rubbers M.

No. 15,320.—WARREN S. BARTLE and EBENEZER VAUGHAN.—*Straw Cutter*.—Patented July 15, 1856.

By the combination of the knife E, lever F, main pitman H, and secondary pitman L, when the fly-wheel is made to revolve in a direction opposite to the operator, the knife performs a downward drawing stroke, variable in obliquity and draught; being most oblique and of greatest rapidity of draught at the points in the stroke where the resistance of the straw is greatest, which stroke is the most effective that can be obtained for cutting straw.

Claim.—I claim the mode of operating the knife by means of the lever F and secondary pitman L, in combination with the knife and main pitman H, by which a variable downward drawing stroke is effected.

No. 15,342.—OREN MOSES.—*Straw Cutter*.—Patented July 15, 1856.

The nature of this invention can be understood by reference to the claim and illustration. The wheel K can be adjusted on shaft *f* by means of set screws *l* working in circular slots.

Claim.—Constructing the auxiliary cylinder *h* of an iron skeleton, combined with fillings *g g* of wood, horn, or other suitable material, when the shaft *f* of said cylinder is secured to its driving pinion K in such a manner that the relative position of the cutting cylinder *b* and auxiliary cylinder *h* can be so adjusted as to cause the edges of the knives *d d* in the former to act equally and uniformly upon every portion of the face of each of the fillings in the latter cylinder, for the purpose of preventing the formation of deep channels in said fillings, substantially as herein set forth.

No. 15,333.—COTTON FOSS.—*Straw Cutter*.—Patented July 15, 1856.

The nature of this invention consists in attaching to the handle V of a cutting blade W an arm *d*, in which a friction roller *e* is secured; the said roller is made to travel up and down an inclined track *f*, which is secured to the front of the machine, by which means a drawing cut is given to the blade, and the operation of cutting the feed performed with less labor, the serrated blade *c* serving to hold the feed during the process of cutting.

Claim.—The stationary arm *d*, friction roller *e*, and inclined track *f*.

No. 14,116.—SAMUEL T. SHARP.—*Improvement in Straw Cutters*.—Patented January 15, 1856.

The knife A, and the slotted guard B, through which it is to work, are fastened to the same pivot C; they are made to revolve towards each other by means of straps F F and G G, which pass over pulleys H K and I J, and connect the knife and guard to a lever L fastened to rock-shaft P: U is the feed trough.

Claim.—The arranging a circular knife and a circular guard upon a common pivot, so that they will revolve one towards the other until they meet, each travelling the same distance, or the arranging two knives (circular) upon a common pivot, so that they will revolve towards each other until they meet.

No. 14,410.—EDWIN P. RUSSEL.—*Improvement in Straw Cutters*.—Patented March 11, 1856.

In the operation of the box A, by means of the cams C¹ and friction rollers *h*, the box is elevated, while the movable bottom sinks to allow the lower knife to cut; and when the cut is made and the box falls down, the bottom comes up flush with the knife, and thus aids in feeding the straw to the knives.

Claim —1st. The wheels C, with the rim and cams C¹ on the inside of the rim, in combination with friction rollers *h*, for raising the box, with the knife *b* attached, and causing it to pass the edge of the stationary knife, which is placed in such a position as to give them the shear cut, as set forth.

2d. Setting the box at an angle of about forty-five degrees, and hung on a hinge or pivot, with a joint or hinge *d*¹ in the bottom, for feeding the straw to the knives, and for allowing the knife *b* to cut, as set forth.

No. 15,108.—THOMAS WILES.—*Improvement in Straw Cutters*.—Patented June 10, 1856.

As the projection *p* of the cutter K passes to the right of bar *b*, bottom B falls into position shown in dotted lines, and discharges the cut straw. Raising lever *l*, and carrying knife K back, causes projection

p to bring bottom B into a horizontal position to receive the end of the straw, which falls through trunk A.

Claim.—The feed and discharge bottom B, in combination with the reciprocating knife projection *p*.

No. 15,485.—J. H. GOOCH.—*Improvement in Straw Cutters.*—Patented August 5, 1856.

The knives D are secured to the knife-heads C, which turn loosely on the stationary shaft B; the bracket-shaped support F projects horizontally from the shaft B to such a distance as to nearly touch the rear end of the bottom of the feed-trough A, and the knives D pass freely through the space left between the trough A and the bracket F, and, as the latter serves to support the ends of the straw, the knives will effect a clean and sure cut.

Claim.—Providing a support F on the axle B, and having the axle stationary and the knife revolve on the same, substantially as and for the purposes set forth.

No. 15,674.—SHELTON M. THOMPSON.—*Improvement in Straw Cutters.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I am aware that the moving knives of straw cutters have been held up to the fixed knives thereof by means of springs, set-screws, and other devices. I therefore make no claim to an adjustable or a yielding knife.

But I *claim* the arrangement of the fixed knife B, the shaft A, and spring F, as described, whereby the revolving cutters are held as rigidly parallel to the fixed cutter as if they were unyielding, and are as free to yield for the passage of obstacles as those cutters which yield independently of the arms and shafts by which they are carried.

No. 15,761.—ALEXANDER GORDON.—*Improvement in Feed-Rolls of Straw Cutters.*—Patented September 23, 1856.

This feed-roller consists of the fluted-roller B, which plays loosely on the shaft S, and is rotated by said shaft by means of projection *a* passing through a slot in the body of the feed-roller. The roller exerts a sufficient pressure on the straw by its own weight, while any variation in the thickness of the layer of the straw is provided for by the play which the roller has on shaft S.

Claim.—The construction and arrangement of the feed-roller B and shaft *s*, in the manner substantially as described, whereby the advantages set forth are secured.

No. 15,349.—GEORGE W. SWIFT.—*Improvement in Machines for Threshing and Cleaning Grain in the Field.*—Patented July 15, 1856.

The machine is confined to the ground by a pin through the piece *f*, and the team attached at right-angles to the pole A, the horses turning the machine about the securing stake, and causing wheel B to move forward and wheel C to rotate rearward. Motion is transmitted from driving-wheel C to pinion H, and from pinion H to pulley J, accelerating the latter according to the relative diameters. The driving-wheel B, turning in a reversed direction to driving-wheel C, transmits motion to pinion I, the latter meshing also with pinion H; and a double accelerating motion is thus imparted to the pulley L, which communicates motion to the threshing shaft N, and by means of the belts *d* and *b* to the fan R, and straw-carriers P and Q. The grain is fed by openings T, and, after cleaning, falls into the box U, whence it is discharged through the outlet covered by slide *e*.

Claim.—The pinions and pulleys, in combination with the travelling wheels; the double axles and the pivoting attachment *w f* for giving the driving pulley L an accelerated rotation from the rotation of the travelling wheels, either by the forward motion of the machine, or by a circular motion about its attachment.

No. 15,116.—ALFRED BELCHAMBERS.—*Improvement in Machines for Threshing and Winnowing Grain.*—Patented June 17, 1856.

The grain passes through the apron C and falls upon the chaff-screen J and then upon the wheat screen K, the blast from the fan G¹ blowing the chaff out. The grain passes through the screen K, and falls upon the screen L, and from thence into the spout M, and passes into the elevator. The tailings, heads, &c., pass off the outer end of the screen K and fall upon the screen R, and pass between the corrugated plates U V, the plate V, in consequence of the shake motion of the shoe I working back and forth, and causing said plate to thresh or loosen the grain from the heads.

Claim.—The plates or rubbers U V, placed in the shoe I, when the upper plate or rubber V is hung upon a shaft *m*, so that it may vibrate laterally by the shake motion of the shoe.

No. 15,786.—ISAAC S. SPENCER.—*Improved Grain Threshing Machine.*—Patented September 23, 1856.

The grain to be threshed is placed transversely on the apron B, and is fed by said apron between the cylinders F and G, and passes from between said cylinders down between the cylinders G and H, and the straw is discharged off the end of the apron D, the grain being threshed from the straw in a perfect manner, and without breaking the straw, as the ribs pass over each other similar to a pair of shears and detach the grain from the straw.

Claim.—I do not confine myself to any precise angle of the ribs or

flanches *c*, nor to the precise form, as they may be either curved or straight.

I *claim* the cylinders F G H, provided with ribs or flanches *c* placed obliquely or angularly with their axes, substantially as described, for the purpose specified.

No. 15,917.—JOHN BARNES.—*Improvement in Grain-Threshing and Separating Machines.*—Patented October 21, 1856.

The grain is fed into the hopper *a* and passes under the threshing cylinder B, by which it is forced into the reticulated bolt C, which is slightly inclined, as represented in the engraving. The grain, as it enters the revolving bolt C, is brought in contact with a blast issuing from a branch *d* of a fan D, which blast strikes the grain and straw on the other side of the mouth of the bolt and prevents it from being carried under the cope *e*, said blast urging the passage of the straw down the bolt and separating the grain from the straw.

The inventor says: I do not claim as new a threshing cylinder B and revolving screen C, in transverse relationship to each other, when the said cylinder occupies a central position across the mouth of the screen, as such has been used; neither do I claim the introduction of a blast into the mouth of the screen to assist the separation, and urge the straw down through the screen, irrespective of the lateral and relative arrangement of the blast described.

But I *claim* the arrangement in its transverse relationship to the screen C, and across the mouth thereof, of the threshing cylinder B, on the falling side of the screen, when in motion, or mainly on said side, in combination with the introduction of the blast (by branch *d*) on the rising side of said screen, and between said side and the inner end of the cylinder's throw or action, for the better clearance of the grain from under the cope, and the more easy and effectual separation of the grain as it rises and falls, and is kept free and loose by the lift of the screen, as described.

No. 14,444.—HIRAM CLARK.—*Improvement in Threshing Machines.*—Patented March 18, 1856.

A A is a frame, with feed-rollers B B and C C and endless aprons D D. F¹ and H are pieces composed of a series of elevations and depressions, which fit into each other. The depressions of F contain openings to allow the grain to fall through. The piece E is attached to the slides I I, which receive motion from the crank-shaft J through the connecting-rods K K, the shaft J and the rolls B and C receiving motion from the driving shaft O by means of gear P R S V and T.

The inventor says: I do not claim the precise form of any of the parts, nor the use of feed-rolls and aprons in threshing machines, as I am aware such have been used; but what I *claim* is, the use of the pieces H and F for separating the grain by an action similar to that of a flail, in connexion with the rolls and aprons, or similar device, when constructed and operating in the manner and for the purposes as above set forth and described.

No. 15,074.—WILLIAM HOLMES.—*Improvement in Threshing Machines.*—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use of a series of cams H, constructed and arranged as described, for the purpose of operating beating levers D by revolving in the curves I I, or their equivalent, and striking both the arms of each of the levers D in rapid succession, giving to the downward motion of the longer arm or beater a quick whipping stroke, the whole arranged and operating substantially as described.

No. 14,462.—EBENEZER MATHERS.—*Improved Machine for Felling Trees.*—Patented March 18, 1856.

The nature of this invention will be fully understood from the claim and engraving.

Claim.—The method of straining the saw by means of the curved elastic arms C C and the adjustable bar D, as above.

No. 14,654.—ABEL H. GRENNELL.—*Improvement in Mode of Protecting Vines.*—Patented April 15, 1856.

Fig. 1 represents a perspective view, with the lattice frames extended, and fig. 2 a perspective view of the grapery as closed.

Claim.—The so constructing the lattice frames A A, B B, C C, D D, that they may be swung, with the vines upon them, into a compact form, and be protected by closing around them the double doors G and H, to protect the vines from the weather.

No. 14,865.—HORACE N. GOODRICH.—*Improvement in Winnowing Mills.*—Patented May 13, 1856.

The inventor says: My invention relates to that part of the machine above D which in an ordinary fanning mill would be the top or outside case, and I lay no claim to the arrangement of parts below the point or line of the screen or screen-board D, as the case may be. The screens, of course, are to be graduated for their special purpose, and the grains or grooves into which they slide should be such as to admit of their ready removal and replacement.

Claim.—The arrangement of the screens A, B, C, D, above the ordinary screens and shoes of a common fanning mill, and furnishing a regulated blast to said series of screens, either from the main fan-wheel or an auxiliary wheel near thereto, for the purpose of comprising within one machine or frame the facilities for cleaning all kinds of grain or seeds, and separating them from each other and from the impurities mixed with them.

No. 15,444.—MIRON SMITH.—*Improvement in Ox Yokes*.—Patented July 29, 1856.

The operation of this improvement is as follows: The block *g* is adjusted so as to give the pin *p* a position over or on either side of the central line, as may be desired. By placing the pin on one side of the centre, the arm of the lever with which the ox on that side acts will be increased, and the arm of the lever on the other side correspondingly diminished. Then, as the slides *J* move in the slots *d*, this relation between the arms of lever is maintained for every position of the bow slides.

The inventor says: I do not claim the devices for the simultaneous movement of the bow-slides, as such are not new; but I *claim* the adjustable fulcrum block *g*, in combination with the bow-slides *J J*, as and for the purposes set forth.

II.—METALLURGY.

No. 15,037.—JAMES W. EVANS.—*Improved Amalgamator*.—Patented June 3, 1856.

The connecting rod *K* is attached to the head of the rake-bar *H* at one end, and at the other end to a fixed point, in order to hold the head of the rake-bar in a fixed position while its axis *G* and lower end is being moved, as the body of the rocker *B* is vibrated by means of connecting rod *L*.

Claim.—The use of the rake *J*, in combination with the rocker *B*, whereby a compound agitating motion is obtained.

No. 15,619.—ALVA M. STETSON.—*Improved Amalgamator*.—Patented August 26, 1856.

The auriferous dirt mixed with water flows from the trough into the upper box, the spaces between the tubes *b* being covered with quicksilver. The boxes are so arranged that, as the water flows through the tubes *b*, it will fall on the spaces between the tubes in the succeeding box. The motion of the water falling on the quicksilver causes the latter to amalgamate with the gold in the dirt, the latter being carried off through the tubes *b*. The same operation goes on in each box successively until the dirt passes through the lower box *g*, which is inclined, leaving the gold on the bottom of said box.

Claim.—The employment of the boxes *a a a*, placed in vertical succession, when said boxes are fitted with tubes or pipes *b b b*, as described, for containing the quicksilver and distributing the water, as set forth.

No. 14,023.—DANIEL LEIBER.—*Improved Gold Amalgamator*.—Patented January 1, 1856.

The pans *b* and *f* being filled to the brim with quicksilver, the main shaft *a* is rotated; and the gates of the reservoir being opened, the pulverized and watered mass is allowed to descend into the hopper *j*, and thence through the pipe *k* into the top pan *h*. The stationary scrapers *h* and *i* serve to shove off and discharge the metallic debris into the trough *f*. As the pan *b* becomes charged with amalgam, a portion of its metallic contents will overflow into the pan *f* along with the debris removed by the scrapers, and the debris from this are again scraped into the trough *l*, and, being stirred by the agitators *m*, the metallic substances precipitate to the bottom, while the sand or water escape over the edge.

Claim.—I claim as new, and of my invention, the use of the reservoir and spout in connexion with the revolving pan and scrapers operating with the stationary trough and agitators, constructed and arranged in the manner and for the purpose as set forth.

No. 15,524.—WARREN S. PIERCE.—*Improved Gold Washer and Amalgamator*.—Patented August 12, 1856.

Quicksilver is placed between the ledges *a* and the top of the furnace B, and as the quicksilver thus becomes heated it is better adapted to form an amalgam; the fine particles of gold that escape over the ledges *a* pass through the screen C, and are arrested by the sponge E enclosed between the screens D. As the sides of the case A taper, the stream of water passing through it is retarded in its velocity as it approaches the discharging end, so that the fine gold will have an opportunity to pass through the screen C, and not be carried over it.

Claim.—Constructing the washer or separator substantially as described, viz: having the furnace B placed within the case A, which has oblique or taper sides, the ledges or plates *a* placed on the top plate of the furnace, and the screen C and the sponge E, which is fitted between the screens D, placed in the case A, the whole being arranged as shown, for the purpose specified.

No. 15,147.—N. C. SANFORD.—*Improvement in Auger Handles*.—Patented June 17, 1856.

By turning the screw C, the plate D will be brought snugly up against the under side of the handle, which will, in consequence, be firmly secured in the eye.

Claim.—Fastening the stick or handle in the eye of the auger shank by means of the screw C passing through the eye B, handle E, and into a recess *a* in the shank, in combination with the clamp or screw-plate D on the underside of the stick within the eye, and operated by the screw.

No. 14,561.—GEORGE G. GRISWOLD.—*Improved Method of Manufacturing Augers.*—Patented April 1, 1856.

The plate *a* is about one-quarter thicker at the shank B and flat, while the remainder of the plate is formed in a convex shape. A plate of this form will be much stiffer when twisted.

Claim.—The form of the plate required for making the twist to the auger or bit.

No. 15,656.—WARREN HUNT.—*Improved Machine for Testing Axes.*—Patented September 2, 1856.

The axe to be tested is slipped up upon bar C, towards the standard B, until it fits tight. The gauge-plate E is then allowed to descend upon the edge of the axe D, when, by placing the eye over slot *f*, the smallest variation from truth may be detected.

Claim.—The described method for testing the trueness of axes, consisting essentially of the bar *c* and slotted gauge-plate E, operating in the manner substantially as set forth.

No. 15,880.—DAVID B. ESTEP.—*Improvement in Making Axe Poles.*—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The manufacture of axe poles by compressing one half only of the axe pole at each operation between dies or swages of the shape described, projecting from the face of the rolls in which they are set, so that the axe pole can be inserted and withdrawn without coming in contact with the rolls, in combination with the use of the adjustable guide *g*, either attached to the dies or separate therefrom, for the purpose of applying the pressure necessary to form the axe pole, in such a manner as to leave any excess or deficiency of iron in the head of the axe pole, thus securing exact uniformity in the two sides of the axe pole, and enabling axes of various size to be made from the same dies by simply adjusting the distance of the rolls and the gauge, substantially as described.

No. 14,704.—BENJAMIN JAMES, assignor to ROSWELL E. JAMES.—*Improved Awl Haft.*—Patented April 15, 1856.

The chamber D within the instrument is intended to hold awls or other tools of different sizes. By means of the hammer head I, the tool may be used for making a hole for the insertion of a peg or nail, as it is calculated that the whole of the shaft will be constructed of metal.

The inventor says: I do not claim making an awl haft with a chamber within it for the reception and holding of awls or other tools; but I *claim* my improved mode of constructing an awl haft, viz: of two levers A B, crossing one another, turning on a common fulcrum C, and

provided, not only with jaws *a b*, like a pair of pincers, but with a chamber *D*, in one or both of the handle arms of said levers.

I also *claim* joining the rear end or part of one of the levers with an extension *S*, and so as to lap over the end of the other lever and receive an entire hammer head *I* upon it.

No. 14,695.—JAMES McLELLAN.—*Improvement in Repairing Railroad Bars.*—Patented April 15, 1856.

The rail, being fitted in the groove *a* of the cooler, has only its upper flanch, and the bar or piece of metal to be welded to it, exposed to the action of the fire, the lower flanch and the centre of the rail being protected by the cooler *D*.

The inventor says: I do not confine myself to any precise form of cooler or groove therein, for it is obvious that the cooler and groove must be varied according to the nature of the work to be done; but I *claim* placing the rail or bar *H* to be heated within a cooler *D*, which is fitted within the furnace *A*, and supplied with water from a reservoir *E*, at the outer side of the furnace, the cooler being so formed or arranged as to encompass or be in contact with the parts of the rail or bar not designed to be heated, substantially as described for the purpose specified.

No. 15,687.—JOSEPH D. CAWOOD.—*Improvement in Repairing Railroad Bars.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the anvil bar or its recesses; but I *claim* the movable press block *D*, having its edge formed to the side of the rail *G*, in combination with another block *D*, with its edge of a similar but reversed form, the movable block to be operated by two cams, or in any other convenient manner, for the purpose of pressing between them a *T* or otherwise shaped rail, thereby facilitating the difficult operation of welding or renewing the ends of such rails after they have been damaged, in the manner described and for the purpose set forth.

No. 14,876.—HORACE LETTINGTON.—*Improvement in Fastening Bits.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The rod or arbor *D* passing transversely through the stock or bit *A* and a portion of the socket *B*. The rod or arbor having a notch *d* in one side, and the shank *b* of the bit *C* also having a notch *e* in one side, and the rod having a bolt *E* pressing against it.

No. 15,500.—LINUS YALE.—*Improved Bolt for Vault and Safe Doors*.—Patented August 5, 1856.

The door A and jamb B are provided with an offset or rebate a^1 and b^1 , which match and close flat against each other; across the shoulder joint are angular hooks c^1 attached to a bolt-bar C. The bolt d^1 of the lock D shoots into a notch of the bolt-bar C, and holds it from a downward or end movement, which is necessary to allow the door to open, as the hooks c cannot be drawn straight out of the holes e^1 in the jamb B, but must have a downward and outward motion, to be freed from their hold upon the jamb. This motion is given by the motion of the door upon its hinges, the closing motion raising the bar, and the opening or outward motion depressing the same.

Claim.—An arrangement of bolts or bars, which are self-acting, in the manner or an equivalent manner to that described, and for the purposes set forth.

No. 15,729.—EBENEZER COLEMAN and PHILEMON COLEMAN.—*Improvement in Heading Bolt*.—Patented September 16, 1856.

The blanks to be headed are placed between the jaws F, and motion being given the shaft B, the arm b is depressed by means of the lever N, and the projection a on shaft B will strike against the pitman b , and the slide D will be shoved forward, the die E partially forming the head on the blank; the jaws F are closed so that the dies E will grasp the blank, while the head is being formed by bars a^1 attached to the slide D. The slide D and die E are drawn back in consequence of the projection n on shaft B striking against the arms o , and the lever L is also drawn back, being connected with the slide D, the jaws F being expanded by a spring a^2 , and the incline K actuates the pawl l ; and the treadle I being depressed by the foot of the attendant, the rollers h grasp the blank which is rotated between the jaws in consequence of the pawl l rotating the ratchet roller i , the rollers bearing against the blank. The blank is rotated a quarter of a revolution, and the operation of heading, as described, is repeated until the head is formed.

Claim.—The levers H H, with rollers h h attached to them, and the ratchet roller i attached to the pendant plate G; the above parts being arranged and operated as shown, for the purpose specified.

Further, the heading die E and jaws F F, provided with dies e e , when arranged as shown, so as to operate conjointly with the rollers h h and i , for the purpose set forth.

No. 14,258.—TIMOTHY F. TAFT.—*Improved Bolt Machine*.—Patented February 12, 1856.

The iron employed is of the size of the shank of the finished bolt, a portion of the metal being upset to form the head; the bolt-holder P being thrown forward, as represented in fig. 3 by dotted lines, a heated blank is dropped into the hole in the heading-tool Z^1 . The lever Y^1 is

then depressed, and the cam W^1 , operating upon projection b , returns the bolt-holder to its position beneath the upsetting punch M , which now descends to upset the metal for the head; the punch M is then drawn up, and the side punches i come up and form two opposite sides of the bolt-head; as these recede, the bolt-holder is caused to make one fourth of a revolution, the wheel Z taking into wheel B^1 , and D^1 into E^1 . If a six-sided bolt is required, wheels Y and A^1 are made use of, which gives the bolt-holder one sixth of a revolution between each operation of the punches. The upsetting punch now descends again, and the side punches are brought up to form two new faces of the head. The side and top punches thus alternate with each other until the bolt-head is completed, when the operator raises the lever Y^1 , and the sleeve U^1 is caused to descend, and the cam W^1 (which previously operated upon pin b to throw the bolt-holder in the position represented in fig. 2) is brought to bear upon the pin c , by which means the bolt-holder is thrown into position represented in fig. 3 by dotted lines, when the rod A^2 (supported at g) will rise within the bolt-holder and force out the bolt, as will be understood from fig. 3.

Claim.—1st. The two side punches operating simultaneously and equally upon opposite sides of the bolt, in combination with the intermittent rotary motion of the bolt-holder, for the purpose of finishing the bolt-head, with its centre in the axis of the shank, as set forth.

2d. The forward and back motion of the bolt-holder when the rod A^2 , which ejects the bolt, is supported at a point in advance of that on which the bolt-holder vibrates for the purposes of ejecting the finished bolt, as set forth.

No. 16,228.—WILLIAM E. COPELAND.—*Improved Spring Bolt.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not claim combining a lever with a bolt, and for the purpose of moving the said bolt rearward, because such is a very old application of a well known device.

Nor do I claim so combining a lever with a spring bolt and its case as to operate the bolt, substantially in the manner as described in the specification of the patent of Bush—that is to say, so that it shall operate not only as a cam lever, but as a stop.

Nor do I claim applying to a bolt or a rod a lever and a stop, and in such manner that the bolt or rod not only may be moved by power applied to the lever, but may be stopped or held in place by the stop acting against the lever; for such is an old and well known contrivance.

But I *claim*, as an improvement on the invention as patented by the said Bush, my improved arrangement of the stop lever H with respect to the bolt, and so as to operate therein, and into and out of the bolt case, substantially as specified.

I also claim combining with the main spiral spring D the secondary and separate spiral spring E , or its equivalent, when the bolt is ap-

plied to its case, and the springs are arranged within a trapezoidal recess or chamber of the bolt, and made so as to operate essentially as specified.

No. 14,381.—GEORGE WOODWARD.—*Improvement in Heading Bolts*.—Patented March 4, 1856.

In heading a long bolt, after the upper end of it has been heated, the lower end of the bolt is passed through the passage M, and the upper part is inserted between the jaws *c d*. The bolt being regulated to the required length, the workman depresses the treadle N so as to move the levers A and B and to confine the bolt between the jaws, while he hammers down and forms the head on it.

Claim.—The two oscillating shanks or levers A B, when combined in the manner as specified with the suspended and bent toggles K L and the perforated treadle N.

No. 14,086.—H. M. CLARK.—*Improvement in Machines for Heading Bolts*.—Patented January 15, 1856.

The general features of this improvement will be understood from the claims and engravings.

Claim.—1st. The arrangement herein shown and described of the two heading dies N *n*, when operating together, in such a manner that, while neither die is in motion or at rest without a like action of the other, the one or internal heading die *n* receives an abrupt accelerated motion towards the close of the joint advance movement of the two dies, by means of the arrangement of the dies in the general slide O, in combination with the lever *q*, or its equivalent, acting in concert therewith, essentially as and for the purposes set forth.

2d. Giving the gauge *f* the several intermittent movements specified—upwards, downwards, and laterally—whereby, after performing its office of gauging, it moves away to give room for the heading dies to operate, and afterwards suddenly descends to detach the bolt from the clamp, and by said action or blow to clear itself of any adhering scale or dirt, as described.

No. 16,301.—WILLIAM HANNAH, assignor to L. H. BOWEN and WILLIAM HANNAH.—*Improved Machine for Trimming Bolts*.—Patented December 23, 1856.

In using this instrument, the eccentric lever C is raised sufficiently to allow the cutting edge of the sliding die *a* to recede sufficiently and to open the space to allow the article to be cut to pass through; then by holding firmly the lever A, and pressing down the eccentric lever C, the sliding face plate B, with the sliding die, is pushed forward, cutting off the screw as desired.

Claim.—The arrangement of the sliding and stationary dies *a a*, as described, and operating with the sliding face-plate B, in connexion with the horizontal lever A and eccentric lever C, for the purpose set forth.

No. 14,633.—ROBERT G. PINE.—*Improved Machine for Polishing Buckles*.—Patented April 8, 1856.

Motion is given to the shaft J^1 , and the shafts $E E$ are rotated by their respective belts $L H$; the spiral springs f keeping the face of the buckles A^1 against the periphery of the polishing wheel C , and the guide wheels $D D$ preventing the buckles from bearing too hard against the polishing wheel. As the shafts $E E$ rotate, they gradually move longitudinally, in consequence of the screw-threads $d d$ in the bearings $e e$, and consequently the whole outer sides of the buckles will be polished.

Claim.—The combination of the polishing and guide wheels $C D D$ with the rotating and longitudinally moving shafts $E E$, provided with clamps F^1 , the shafts $E E$ working in yielding or elastic bearings, substantially as shown, for the purpose specified.

No. 14,442.—WILLIAM BUTLER.—*Improvement in making Chilled Castings*.—Patented March 18, 1856.

A is a cast iron box; B is a sand core; $C^1 C^2$ are the hollow chill cores; $D D$ are the ends of the box; its inner surface $D D$ is chilled at each end by means of the chill cores $C^1 C^2$. The hollow chill cores $C^1 C^2$ are placed a sufficient distance apart to form the chamber by means of the sand core B . The sand core B is formed by forcing the sand through the hollow chill cores $C^1 C^2$ into the chamber, after which the cores are dried and set in the mould ready for casting.

Claim.—The combination of the hollow chill cores C No. 1 and C No. 2 with the sand core B , for the purposes of obviating the difficulty of warping and springing attending the casting of iron boxes on chills, and thereby a chamber in the box, and in the manner and for the purposes within described.

No. 15,427.—F. R. LANGWITH.—*Improved Clamp for Plumbers*.—Patented July 29, 1856.

The pipe G is clasped by the box $A B$, while the lever H is inserted in place of the barrel a of the cock F . If, however, the lever C is used, it will clasp the cock at its lower end by the box J , as shown in fig. 1; and by the nuts $E E$ on the bolts $D D$ acting on the levers H or C , it can be adjusted and firmly held while soldering the shank of the cock to the pipe at C .

Claim.—The combination and arrangement of the clamp box $A B$, and the clamping levers C and H , when either is used; and also in combination therewith the screws for adjusting the cock in a proper position during the process of soldering with the main pipe, when arranged and operating substantially as described.

No. 16,115.—EVAN L. EVANS.—*Improvement in Curry-Combs*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim simply constructing curry-combs with flexible backs, for this has been previously done.

But I *claim* constructing the curry-comb with an elastic or flexible back A, formed of India-rubber, and securing the teeth *a* permanently in the back, by having the India-rubber, which encompasses the teeth, project from the face of the back, in the form of ridges *b* and cones *c* projecting to the point of the teeth, substantially as shown and described.

No. 15,560.—GEORGE FETTER and JOHN S. MCCLINTOCK.—*Improvement in Coupling-Pipes*.—Patented August 19, 1856.

C represents a tapering ferrule, having a raised portion *b*, with six or eight sides, and on the inside a number of projections *d*; this ferrule is placed on the end of the pipe B, and a tapering plug G is driven into the end of the same, which forces the lead against the inside of the ferrule, and causes the projections *d* to penetrate the lead in such a manner that the pipe cannot turn without the ferrule. The stop-cock D is then connected with the pipe by screwing it into the same, and the end of the cock is provided with a small smooth portion *a*, for the purpose of guiding said screw, and preventing the lead from burring up inside the pipe.

The inventors say: We do not claim exclusively the enclosing of the ends of lead pipes, in a tapering ferrule of metal harder than lead, for the purpose of attaching connexions thereto, and the use of right and left handed screws on such connexion.

But we *claim* the tapering screw, terminating in a smooth and rounded end on the connexions, for the purpose of guiding the said screw, and preventing the lead from burring up inside the pipe, in combination with a tapering ferrule on the end of the lead pipe, said ferrule having any convenient number of projections for preventing the pipe from turning within the ferrule, while the end of the said connexion is being screwed into the pipe.

No. 15,512.—CHARLES R. GARDNER.—*Improvement in Dies for Screw Blanks*.—Patented August 12, 1856.

The shape of these dies is represented by the illustration figure 1, representing a top view of the face of the die, the oblique parallel lines showing the grooves in the face; figures 2 and 3 represent transverse sections. The blank is placed between the two dies, and by moving the upper die over the lower one, under a heavy pressure, the impression of the screw thread is produced on the blank; figure 3 represents the shape of the blanks for cutting gimblet-pointed screws, and figures 4

represent the sides of the dies, the slope b and elevation a being required to point said screws at the same time that they are threaded.

Claim.—The elevation a and the slope b , each substantially as described, and for the purposes specified.

No. 15,278.—WILLIAM M. BOOTH & JAMES H. MILLS.—*Improvement in Dies for Stamping or Pressing Sheet Metal.*—Patented July 8, 1856.

The blank is placed upon the face of the lower die; the upper die is forced upon it; the movable part, B and G resting upon springs I and D, recede until they find their bearings in the solid part of the die, thus constantly affording support to the sheet metal, until the impression or form of the die is given; and when thus forced together, become as if they were two solid dies, and effect with a single blow or operation what, in the ordinary method of stamping with a solid die, requires a number of successive operations.

Claim.—Pressing, stamping, or forming metal by the upper and lower dies A and E, or their equivalent, the said dies being movable parts B and G, supported by springs. The whole being constructed and operated in the manner herein set forth.

No. 15,080.—PATRICK MCGLEW.—*Improved Die-Stock for Cutting Screws.*—Patented June 10, 1856.

If the set-screw n is turned so as to allow the spring l to set the pawl D in operation, the ratchet B with its dies H H¹ will be turned when the handles are vibrated; but if D is thrown out and C let in, the dies will be turned in the opposite direction. If both pawls are let into the teeth, then the dies will vibrate with the handles.

The inventor says: Ratchet drill stocks, auger handles, and wrenches are in use, and I do not broadly claim attaching screw-cutting dies to a two-way or double ratchet moved in either direction as desired by adjustable pawls, which are operated by vibrating handles. Nor do I broadly claim the employment of a cam or cams E for tightening screw-cutting dies. Neither do I claim adjusting the pawls by set-screws m and n .

But I *claim* the arrangement of one or more dies H H¹ within a circular two-way ratchet B, which is moved by adjustable pawls C D, as herein described.

No. 14,834.—WILLARD H. SMITH.—*Improved Door-Fastener.*—Patented May 6, 1856.

To apply the fastener to a door, place the hooks of the staple a against the rebate of the frame, the wings $e e^1$ being folded out of the way, then close the door, forcing the hooks of a into the frame, open the wings, placing them square across the line of the door; then turn

the screw nut *d*, and the wings of the plate will accomodate themselves to the jamb, moulding, and door.

Claim.—The use of the screw nut *d*, working on the hinged stem *b*, as a means of adjustment of the plate *e e*, when employed in combination with the staple hook *a*, all operating in the manner and for the purposes substantially as set forth.

No. 16,048.—LEGRAND CROFOOT.—*Improved Door-Fastener.*—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Combining the two plates A and B, constructed in the manner described, with the spring bolt of the plate A and the eye-hook of the plate B.

No 16,282. —JAMES LETORT.—*Improved Door-Fastener.*—Patented December 23, 1856.

The blade 1 is placed, as far as the shoulder *b* thereof will allow, with the hooks *a* towards the jamb; the door is then closed; and if the blade 1 is not thick enough to force the hooks *a* into the wood of the jamb, then the blades 2 and 3 may be turned over blade 1. The door A being now closed from the inside, the lever-bolt 4 is inserted in the square hole 5 of the blade, thus fastening the door.

Claim.—The employment of the bent lever bolt 4, when in combination with the blade 1, or the additional blades 2 or 3, substantially in the manner and for the purposes set forth.

No. 14,594.—G. H. LINDNER.—*Improvement in Door-Fasteners.*—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The two catches *a b* provided with hooks or curves *d e* at their ends, which hooks or curves pass around the pin D attached to the sill or lintel of the door or window frame; the catches being fitted within the case B which is attached to one of the doors or windows, the catch *b* being provided with projection *g h*, against which the bar *c* attached to the other door or window acts, substantially as shown, for the purposes specified.

No. 14,773.—ELISHA P. MOULTON.—*Improvement in Door-Fasteners.*—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Constructing turn buttons or fasteners, the stem E and head of the button B being in one piece, and having a collar F at its end that

prevents the button from being withdrawn from its frame by the strain brought on the head of the button by the door which it secures, the stem of the button having a square part that is pressed against by a spring C.

No. 14,112.—REED PECK.—*Improvement in Door Fastenings*.—Patented January 15, 1856.

The standard is made in two parts A and B, which are guided in their motions up or down by straps *a a* fastened to the door. By means of the pinion *d* the upper end of B and the lower end of A will move simultaneously into or out of the mortises in the floor and top beam. A spring *b*¹ is fastened to the door, and the spring-latch *a*¹ prevents the standard B from rising as long as the door is open. In closing the door the top of the spring strikes the beam before the door gets to its place; and as the door is carried along, the lip on the spring is drawn from the top of the standard, when (by reason of the gravity of the lower standard A) the standards will fasten the door at the top and bottom.

Claim.—The combination of the spring with the gearing, by which the standard is rendering self-fastened, substantially as described.

No. 15,332.—HENRY H. ELWELL.—*Improved Door-Knob*.—Patented July 15, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

Claim.—Dividing the spindle diagonally, and providing a screw-hole *b* in one end of each of its sections *c c* at right-angles to the division line.

No. 15,367.—JEREMY W. BLISS.—*Improvement in Door-Knobs*.—Patented July 22, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

Claim.—The employment of the intermediate piece *c*, having a cut or ricket surface corresponding to and secured upon the spindle *b* by the set screw *d*, at any desired point, in the manner herein described.

No. 14,595.—NATHAN BENHAM.—*Improvement in Fastening Door-Knobs*.—Patented April 8, 1856.

The nature of this invention consists in the fastening of knobs of doors of different thickness to any distance on the shaft without the aid of washers.

The screw C, being screwed down in the slot E, presses outwards the sides *s s* of the shaft B, to fit the wedge-shaped holes D in knobs A.

Claim.—The use of the slotted shaft E with the wedge-shaped hole D, said shaft being opened by a screw, or its equivalent, in the manner substantially herein set forth.

No. 16,047.—ALMON COOLEY, assignor to RODERICK TERRY and Himself.—*Improvement in Fastening Door-knob Spindles*.—Patented November 11, 1856.

The spindle S passes through the door D and lock in the usual manner. The slide C is placed on the spindle and pushed up to the washer of the door. The knob K is then screwed on to the slide C, and the shoulder in the socket forms the flexible part of the conical slide down to the sides of the spindle and holds it fast.

Claim.—The conical slide C, when combined with the spindle S and knob K, and constructed in the manner described for the purposes specified.

No. 14,326.—DAVID G. SMITH.—*Improved Door-Spring*.—Patented February 26, 1856.

One end of the arm E is laid into the hook *f*, so as to move together with the door B, whereas the other end of it is hinged at *i* to the spring-barrel *b*.

Claim.—The use of the lever E, in connexion with the barrel *b* and spring *c c*, constructed and operated in the manner described.

No. 14,691.—GEORGE W. GRISWOLD.—*Improved Door-Spring* —Patented April 15, 1856.

The nature of this invention consists in making the arm or rod F itself the spring, and so pivoting it at C to the loop E of the plate D that it may be furnished with a friction-roller *i*, whereby torsion of the metal is prevented.

Claim.—The arm F, with its attachments to the door and frame, when said arm serves the purpose of spring and lever for closing, holding, or opening the door, substantially as described.

No. 14,686.—GILBERT L. BAILEY.—*Improved Door-Spring*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I do not claim a coiled spring in connexion with a crank, for these are well known devices. Neither do I claim having the spring act most powerfully when the door is closed as new. I am also aware that a toggle-joint has been used heretofore for various purposes, and I do not claim this in itself as my invention.

But I *claim* the spring E, crank-arm H, and rod D, constructed and operating in connexion as described, so that the crank-arm turns inward whilst opening the door.

No. 15,555.—JOHN BROUGHTON.—*Improved Door-Spring*.—Patented August 19, 1856.

A A represents a portion of the door, B a portion of the door-jamb. The door is hinged, as at *a*, to the jamb in the ordinary manner. Fig. 1 represents the door as being closed. By opening the door the leaves *c* are caused to unfold in the manner illustrated in figs. 2 and 3, and consequently the quadrantal projections *e* are turned so as to cause the elastic tugs *f* to coil round them, and thereby to become shortened, and consequently to draw the end of each of the springs D towards the edge of the door and jamb, and thus bring the springs D into action and cause them to exert a powerful strain upon the leaves *c* of the hinge, and when the door is set free cause them to fold together and close the door.

Claim.—The employment of an additional hinge C, unfolding and folding the reverse of the hinges *a*, and having formed on each side of its leaves a quadrantal or other suitable projection, in combination with the flat or other suitable springs D D', substantially as and for the purpose set forth.

No. 14,583.—ALVIN BARTON, assignor to himself, A. R. MORGAN, and J. M. PARSONS.—*Improvement in Door-Springs*.—Patented April 1, 1856.

The case A contains a spiral spring R, which acts upon the shaft of the wheel E. The two gear-wheels F and E, having their shafts out of their centres, are made of an elliptical form. One end of the rod L is attached to the shaft of wheel F, and the other end to the pulley T. As the door opens, the pulley T runs on the rod towards the hinge-side of the door, and consequently its power is lessening, while it increases when the door closes. This effect is attributable partly to the eccentricity of the gearing, and partly to the changeable point of action of the lever on the rod T.

Claim.—The employment of eccentric cog-wheels E and F, as described, in combination with the coiled spring-lever and guide-rod attached to the door or gate, as set forth.

No. 15,864.—ALEXANDER J. WALKER.—*Improved Bracket for Door-Springs*.—Patented October 7, 1856.

The part A of the bracket is intended to be inserted into the socket C. The holes B and C are made of the same size and shape as the end of the spring H, and are to receive and hold it when in operation. They are so placed that the corner of one faces a side of the other, so that, by changing the spring from one to the other, its power can be regulated by eighths instead of by fourths of a turn. The socket C is to be fitted into the door or casing K.

The inventor says: I do not claim the application of steel rods to doors to act as springs.

I claim constructing one of the brackets, used for attaching such rods,

with an additional hole for receiving and holding them when in operation, said additional hole bearing such a relation to the first that, by changing the spring from one to the other, greater nicety can be observed when applying it, in regulating the power with which it shall act; and attaching to said bracket a lever to assist in twisting the spring when applying it.

I also claim securing said bracket in its place by means of a socket inserted in the door or casing, or any other means substantially the same, that will instantly secure it, after it has been applied to the spring, and the necessary power obtained, and will also allow of its being easily removed and reattached when it is desirable.

No. 15,493.—ANSON H. PLATT.—*Improved Door-Stay*.—Patented August 5, 1856.

When the lever *a* is pressed downward so as to stay the door, the dog 5 passes over the notches *b*, and retains the bolt in any desired position from moving upward. To liberate the door, the upper end of the dog 5 is pressed inward; the lower end will be raised from the notches, and the spring *d* will carry upward the lever *a* and the bolt connected therewith.

Claim.—The use of the bolt 6, the lever 7, and the dog 5, arranged and operating in the manner and for the purposes set forth.

No. 15,912.—STEPHEN A. WHIPPLE and HERNAN WHIPPLE.—*Improved Machine for Cleaning Emery Wheels*.—Patented October 14, 1856.

The nature of this invention consists in bringing the surface of the emery wheel *F*, or emery band *H*, in contact with the upper surface of a revolving roller *D*, that is partially immersed in water, whereby, as the roller *D* rotates, only the surface of the band or wheel is moistened, and the emery or polishing material as it is washed off is deposited in the water of the trough *C* and saved for future use.

The inventors say: We are aware that rollers partially immersed in water or other fluid have heretofore been used for a variety of purposes, therefore we do not claim the same. But we *claim* the use of the roller *D*, revolving in contact with the water, and the superincumbent wheel *F*, substantially as and for the purpose set forth.

No. 14,881.—JAMES L. NORTON.—*Improved File-Cutting Machine*.—Patented May 13, 1856.

The spiral worm *k* being in gear with a rack *R* of the carriage-block, the latter advances until a projection or trigger *m* comes in contact with a projection *o* of the lever *S*, which, being up to that moment hooked into another lever *T* of the fulcrum *p*, is thus made to trip, and detaches the latter. The lever *T* thus detached is drawn by spring *V* towards the pillar-block *P*, and brings the up-

right U under the tooth *h*, which movement stops the motion of the chisel by disconnecting said tooth *h* from the action of the cam-plate Q. This short end of T is forked, and holds with its fork the bolt *q* of the pillar-block O; and thus, by the movement just described, the latter is moved in the direction of the arrow, and turns at the same time the pillar-block P on its fulcrum *f*; this latter movement turns the cam-plate Q and spiral cam *k* obliquely to the rack R, and thus disconnects them. The carriage-block now slides backwards by the falling of the weight W.

Claim.—1st. Hanging the worm-wheel shaft N in movable bearings P O, so that the worm may be disengaged from the feeding rack without stopping its motion to do so, for the purpose of allowing the carriage to run back and be set for the next series of nicks.

I also claim, in combination with the movable shaft, the adjustable projection *m* and levers S T, for first holding and then disengaging the shaft to admit of its swinging.

I also claim, in combination with the sliding-carriage C, the projection *t* and adjustable former Y, for keeping the blank at a uniform distance from the nicking tool for the purpose of equalizing the force of the blow, notwithstanding the taper of the blank.

I also claim the use of the spaces 1 2 3 for regulating the force of the spring upon the nicking tool.

No. 15,525.—GEORGE M. RAMSAY.—*Improved Files*.—Patented August 12, 1856.

The nature of this invention consists in making flat files in pairs, with right and left cutting corners, with grooves in accordance with the same, for the purpose of working in sharp angles or sharpening saws, in place of using three cornered files.

Claim.—Constructing flat files in pairs, or with right and left cutting edges or corners, as described. Also in making the grooves to run in the manner described, in combination with said files, all substantially as set forth.

No. 14,189.—MAJOR H. FISHER, assignor to JOSEPH A. HYDE.—*Improvement in Cutting Files*.—Patented February 5, 1856.

The nature of this improvement will be understood from the engravings, wherein *e* represents the chisel.

Claim.—The sliding and self-adjusting chisel-holder *g*, constructed and operating substantially as described.

No. 16,064.—CHARLES MILLER.—*Improvement in Cutting Files*.—Patented November 11, 1856.

Motion being imparted to the shaft J, the cam I operates on the under side of stop *d*, and raises the chisel H, and the descent of the

chisel to strike the blow is produced by the action of spring *e*. As the chisel strikes its blow, the nut *f* comes in contact with the top of stock *G*, which serves as a stop thereto, and thus serves to prevent the further movement of the chisel, and hence regulates the depth of the cut.

The inventor says: I do not claim the mere employment of a stop to regulate the depth of cut of the chisel.

But I *claim* fitting the chisel to work in a stock which rests upon the file blank itself, or on a pattern of similar form moving with it throughout the whole length of the movement of the blank under the chisel, and serves as a stop to the chisel, substantially as and for the purposes described.

No. 15,867.—MILTON D. WHIPPLE, assignor to A. B. ELY.—*Improvement in Cutting Round Files*.—Patented October 7, 1856.

The blank is sustained in an angular bearing *a* (fig. 2) in the bed *R*, which is secured to the top of the standard *Q*, rising from the table *C*. Motion being imparted to the shaft *D*, the wipers *b* operate the arms *X*, which thus cause the shafts *V* to vibrate; to these the helves *U* carrying the cutters *T* are attached. The cutters are thrown against the blank *H* by means of the springs *Z*. At the smaller portion of the blank, the cutters, having a longer distance to travel, will be more resisted by the springs *A*², and a lighter blow will be transmitted to the blank.

Claim.—1st. Operating upon the blank immediately beyond its point of support, in the manner and for the purpose substantially as described.

2d. Feeding the blank forward and rotating it upon its axis as the cutting proceeds, when it is operated upon by the vibrating cutters, in the manner substantially as set forth.

3d. The method described of operating the cutters by means of the wipers *b* and the springs *A*² and *Z*, whereby the force of the blow is diminished as the size of the blank decreases, as set forth.

4th. Forming the cutters of circular disks or of portions thereof, in the manner and for the purpose substantially as set forth.

No. 14,575.—WILLIAM RODGERS and ABRAHAM BANNON.—*Improvement in Forge Fires*.—Patented April 1, 1856.

A is an additional tweer, on the opposite side of the fire. This tweer is constructed like the other, with the exception of its being made to move back by means of lever *B*, in order not to interfere with the taking out of the loop. The bottom of the hearth *C* diverges from a straight line.

Claim.—We claim the forge-hearth *C*, as described, when employed in connexion with the tweers *D* and *A*, operated by the lever *B*, the whole constructed as set forth.

No. 15,571.—CHARLES PARKHUST and CHARLES WEED.—*Improved Machine for Forging Horse-Shoe Nails*.—Patented August 19, 1856.

The main features of this invention will be understood by reference to the claims and illustrations, a detailed description of which would take up too much space to be given here.

The inventors say: We *claim* making the nail-guide M movable up and down, with respect to the anvil B and its top hammer D, and the lateral hammers E and F, when said anvil is made stationary, as specified, said improvement being advantageous in several respects. We do not claim moving the nail-guide M towards the cutters P and Q; but what we do *claim* is, the combination of mechanism for operating said nail-guide, or moving it from the anvil to the cutters, and retaining it between the cutters during the descent of the vertical slider L, far enough to separate the nail from the rod, such combination consisting of a lever, latches R and W, the eccentric S, the rocker lever N, and the springs V and X, applied to the guide-tube M and the vertical slider L, constructed and operated essentially as described.

No. 14,280.—GEORGE H. CORLISS and ELISHA HARRIS.—*Improvement in Forging Thimbles*.—Patented February 19, 1856.

The shafts C can be moved in the direction of their axes by pushing rod J in the direction of the arrow, for the purpose of withdrawing the eccentrics E from the stocks F, and allowing them to be moved up their guides *h* by means of depressing the outer end of the lever K, so as to cause the lever end *g* to act upon the levers *b'* *b*. As soon as the stocks F, together with the hammers *a*, have thus been moved out of the way, the finished thimble can be withdrawn.

Claim.—1st. The employment for forging thimbles of an anvil O and hammers *a a*, operating substantially as herein set forth.

2d. In combination with the arrangement of the shafts of the eccentrics to slide the eccentrics out of the stocks F F, which carry the hammers or squeezers; the inclined guides *h h* to receive the said stocks after the withdrawal of the eccentrics, and the levers *b b'* *b b'* and K for the movement of the stocks up the said guides to withdraw the hammers or squeezers from the interior of the thimble to admit of its removal from the machine; all arranged and operating substantially as herein set forth.

No. 15,118.—NATHAN BRAND.—*Improved Machine for Bending Hay-Forks*.—Patented June 17, 1856.

The fork is placed in a heated state on the stationary jaw A, a tine extending along each side of the jaw A. The spring handle H is then depressed, the wings or side levers D D are forced against the sides of the stationary jaw A, and the tines of the fork are bent laterally of the desired form, corresponding to the shape of the jaw A. The movable jaw C is then brought down over the jaw A, and the edges of the jaw C bend the tines downwards, corresponding to the form of

the ledge *a*, the tines being pressed between the ledge *a* and the edge of the jaw C. The shank of the jaw is also properly formed, the proper inclination being given it by the ledge *f*, which compresses it upon the die B.

The inventor says: I am aware that numerous machines have been made with a former and vibrating arms or levers for bending pieces of wire and metal for various purposes; therefore I do not claim such devices when so used; but what I do *claim* in the above described machine for bending and giving a proper form to hay-forks which are made with two tines and a shank is, the combination and arrangement of the following devices, consisting of the stationary-jaw A, provided with a ledge or side projection *a*, the die B with a score for the shank of the fork, the hinged wings or side levers D D, operated so as to bend the tines around the jaw A, the hinged jaw C, so arranged as to give the tines the curve required and press the shank into the score in the die B, and give it the proper position in relation to the tines.

No. 15,541.—WILLIAM WRIGHT and GEORGE BROWNE.—*Improvement in Blast-Furnace*.—Patented August 12, 1856.

The blast passes from the pipe A through the cupola wall at B into the central portion C of the cupola. This chamber being thus filled with air under pressure, the air is restrained from passing upwards by the material in the furnace; the air escapes from said chamber and passes through the arches E and lateral apertures I into the furnace; and as it passes over the heated metal which is on the bottom of the cupola it becomes heated, and thus any blast which enters the furnace is heated in the furnace, without using any of the devices heretofore known for supplying furnaces with heated air.

Claim.—The general arrangement and construction of cupolas and smelting furnaces for the self-heating of the air blast by the arrangement of the chambers and air passages, as described.

No. 14,257.—CHRISTIAN SHUNK.—*Improvement in Fluxing Blast Furnaces*.—Patented February 12, 1856.

The salt is introduced through valve *e* into box *c*, and is carried to the common tuyere *b*, and through it into the furnace, by means of the blast entering through pipe *a*.

The inventor says: I do not claim originality in the use of common salt in treating iron; but I do *claim* applying and introducing common salt as a flux or solvent, or its equivalent, into blast furnaces at the tuyere or any point below the tunnel head, in the manner and for the purposes described.

No. 15,907.—GUILLAUME H. TALBOT.—*Improvement in Gimlet Handles*.—Patented October 14, 1856.

In boring with this gimlet, the operator presses the handle away from him and towards the gimlet, and by so doing brings the rag wheel *a*¹

in contact with the pin d^1 , which holds it out of gear with c^1 , while the rag wheel a is brought into gear with c by the spring e . To withdraw the gimlet the operator pulls the handle towards him, and by that means brings the rag wheel a in contact with the pin d , which holds it out of gear with c , while a^1 is brought into gear with c^1 by the spring e^1 . The teeth of the ratchets $a c$ are set to engage and turn the gimlet when the handle turns to the right, and those of the ratchets $a^1 c^1$ to engage and turn the gimlet when the handle turns to the left, the spring allowing the wheel c or c^1 to move back and disengage itself from a or a^1 , when the handle turns in the opposite directions to those above named under each condition of the rag wheels.

The inventor says: I do not confine myself to the particular arrangement or rag wheel gearing represented; but I *claim* the application within the stock or handle of the gimlet, or other tool or instrument, of an arrangement of ratchet or rag wheel gearing, operating substantially as described, so as to enable the tool or instrument to be rotated in either direction, at the pleasure of the operator, by turning the handles back and forth in opposite directions, and at the same time pushing it from or pulling it towards him—the direction of the rotation being varied by the pushing or pulling of the stock or handle.

No. 14,316.—EDWARD N. KENT.—*Improved Machine for Separating Gold and other Precious Metals from Foreign Substances*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—The employment of what I term a grain separator, for separating the grains of metal from the earthy substances, or crushed gauge, substantially as described, preparatory to, and in combination with the crusher or equivalent therefor, when the separator is employed as a hopper to the crusher, and combined therewith by a feeding tube or equivalent therefor, for conducting the substances to be crushed below the surface of the column of water in the crusher, substantially as and for the purpose specified.

I *claim* also an improved Chilean mill, consisting of a deep outer vessel A, holding a high column of water, in which the double acting vertical wheels B B combined therewith are wholly or nearly submerged for the purpose substantially as specified. And I wish it to be understood that I do not claim a shallow vessel in which single acting horizontal stones are used; neither do I claim the ordinary Chilean mill.

No. 14,847.—OSSIAN G. AULD and JASPER S. WHITING.—*Improved Riffle for Gold Washing*.—Patented May 13, 1856; antedated February 20, 1856.

The nature of this invention consists in making the openings in the riffle of such a shape that, in gold washing, with a current of water, an

eddy is created, whereby all the gold is brought into contact with the quicksilver, while all tendency to escape is overcome by the action of said eddy and the shape of the flanges.

Claim.—The use of circular cavities or receptacles, constructed in the manner herein shown, having the neck of one diameter and the lower portion of an enlarged diameter, so as to operate in the manner specified.

No. 14,058.—CHARLES HAMMOND.—*Improvement in Attaching Hammer-Heads to Shafts.*—Patented January 8, 1856.

The socket C is secured to the top of the shaft B. It is provided with two projecting lips *a*; these, together with the socket, are inserted into the eye of the hammer head A, and then a wedge D is driven in, which secures said socket firmly to the head A.

Claim.—The socket C, with its projecting lips *a a*, and the wedge D, arranged and employed in connexion with the head A and shaft B, substantially in the manner and for the purpose set forth.

No. 14,167.—GEORGE M. RAMSAY.—*Improved Hinge.*—Patented January 29, 1856.

A is an anti-friction roller near the centre of wing B, and when applied or in use is provided with a concave groove (in the back of the hanging stile) equal to the convex surface of said roller, and in which it is free to roll up and down, while the wing B communicates with wing C in front of the hanging stile, by and through a small groove leading from the concave groove to the front of said hanging stile, while the wing C is made fast to whatever is desired to be hung and swung.

Claim.—The anti-friction rollers A in combination with a joint hinge, substantially in the manner and for the purposes herein set forth.

No. 14,349.—ISAAC DAVIS.—*Improved Hinge for Shutters.*—Patented March 4, 1856.

By making the screw K conical, the screw can be placed within the plane of the outside surface of the window frame behind the radial line *e*, so that the screw is entirely enclosed. The wheel G has flanges J by which it is attached to the window shutter H. By turning the knob M, the screw K, gearing into the teeth of G, will turn the latter, and with it the shutter H.

Claim.—The use of the conical screws K, operating in combination with the wheel G, held in position by and turning on the pin E; the whole being constructed so as to operate in the manner described.

No. 16,272.—JOHN T. GARLICK.—*Improved Spring-Hinge.*—Patented December 23, 1856.

The leaf A is secured to the casing of the safe, and the door of the safe is rivetted to the spring C; this arrangement keeps the door a suffi-

cient distance from the casing for the introduction of a packing, which renders the safe perfectly tight and prevents the admission of water or dampness.

The inventor says: I do not claim the use of a hinge with springs attached thereto, so that the article to which it is attached may be adjusted to the different distances from it.

I *claim* a hinge, or series of hinges, attached to a double-leafed spring, in the manner described and for the purposes set forth.

No. 15,241.—CYRUS KENNEY & WILLIAM GURLEY.—*Improved Machine for grinding Butt-Hinges*—Patented July 1, 1856.

The cam *a*, with its handle *h*, is hung to the elastic arm *a*¹, so as to turn in a plane perpendicular to the bed B and stop G. When the operative places a folded butt on the bed with its knuckles to the stop G, as shown in fig. 4, and then brings down the punch-block upon the butt, the punch-block will slide along the flap of the butt until it strikes the knuckles, and will force the butt against the stop G; the punch-block will there remain, holding the butt for grinding, by the pressure of the elastic support *a*¹ alone.

The griper is fastened to the rock-shaft C, not only to avoid the friction which attends sliding the griper on ways, but to enable the operative to place conveniently the butt in the griper, and to slide the butt across the face of the stone D, so as to grind its edge square.

The inventors say: We do not claim any part or arrangement of the herein-described apparatus which has been before used or known.

But we *claim* the improvement of hanging the punch-block or cam *a* on or to the elastic support *a*¹, arranged in combination with the bed B and stop G, substantially as herein described for the purpose specified.

Also, mounting the griper upon the rock-shaft C, arranged in combination with the grind-stone, as herein set forth for the purposes specified.

No. 16,273.—C. B. GALENTINE, SAMUEL GALENTINE. & ANDREW J. RUSSELL.—*Improved Hoof Expander*.—Patented December 23, 1856.

By placing one of the serrated edges C on either side of the frog and by turning the thumb-screw A, the instrument attaches itself to the hoof, and any degree of expansion is readily accomplished and maintained during the application of the shoe.

Claim.—The application of the instrument described, or any other substantially the same, worked by a thumb-screw, or other form of lever, so small as not to interfere with the operation of nailing the shoe to the hoof of the animal.

No. 14,193.—ELISHA HARRIS.—*Improvement in Machines for Bending Ship Hooks*.—Patented February 5, 1856.

The hook blank properly heated is brought between the rollers A A¹, and the clamp C screwed down upon the eye of the hook as represented in fig. 1. Power is then applied to turn the rollers about half a revolution, by which means the hook is bent round the lower roller A as shown in fig. 2. The rollers are then turned back to their first position, the clamp unscrewed, and the hook removed.

Claim.—The roller or former A of the intended form of the interior of the hook, provided with a pocket or clamp for securing the eye of the blank during the bending operation, substantially as herein described.

No. 14,852.—NELSON B. CARPENTER.—*Improved Horse-Shoe*.—Patented May 13, 1856.

The nature of this invention consists in the construction of a horse shoe which may be fastened to the foot of a horse without the use of nails or other device penetrating the hoof.

The inventor says: I do not claim any particular construction or form of a horse shoe with a rim or flange, although the latter is in fact a part inseparably connected with my invention; yet I am aware that flanges or rims detached in part have been used heretofore in this and other countries. Neither do I claim a "heel bar" or "round shoe," separately considered, as that too has been used heretofore.

But I *claim* a horse-shoe having a branch bar attached to each heel bar of the shoe extending inwardly and at the same time lapping and fitting one to the other, with corresponding apertures through each, for the insertion of a pin or screw, for the purpose and in the manner set forth.

No. 14,915.—JOHN HENDERSON.—*Improved Horse-Shoe*.—Patented May 20, 1856.

The object of this invention is to provide a bearing surface of sufficient extent and the proper form to give a firm and adequate support to the weight of the animal, and to relieve the sensitive parts of the foot from the irritation caused by the friction and contraction of the shoe upon the heel.

Claim.—Arranging a special bearing surface adapted to the rim of the hoof, and terminating in lines converging from the outer to the inner edge of the shoe upon the bars C C, with a gradual deflection of the heel, beginning at the converging lines A¹ A¹, and extending to the rear parts of the shoe at B B.

No. 15,306.—SEWALL SHORT.—*Improved Horse-Shoe*.—Patented July 8, 1856.

The horse-shoe is of the ordinary shape, with the addition of an upward projection *a a*, on each end at the heel, as shown at figure 1;

it is supplied all around with grooves *b*, into which the tongues *e* of the cap figure 2 can be inserted, and the cap can be fastened to the shoe by inserting bolts into the holes *a*, and the holes of the cap figure 2. When both are fastened together, they are as represented in figure 3.

Claim.—The combination of the cap and shoe, made in two separate pieces, the cap and shoe being constructed separately, substantially in the manner, and for the purposes herein set forth, of easy application and ready removal.

Also, the rib and groove attaching the cap and shoe, as above.

No. 16,082.—HENRY BESSEMER.—*Improvement in the Manufacture of Iron and Steel.*—Patented November 11, 1856. England, February 12, 1856.

The cylinder *a*, which is lined with fire brick, is first heated by introducing burning charcoal or wood, and the molten crude iron is run into it through the aperture *p*, at the same time that a blast of air is forced into said cylinder by means of the tuyere-pipes *y*. As soon as the molten metal covers the mouth of said pipes, the carbon of the crude iron is burnt by means of the oxygen of the atmospheric air, producing an intense heat, which causes violent ebullition, driving out the carbon and all foreign matter through the aperture *p*. When the crude iron has been deprived of carbon to the desired degree, so as to be converted into cast-steel or malleable iron, the cylinder containing the iron is turned into the position of figure 2, in which the reduced metal can be run off at the same time that the tuyere-pipes are above the molten mass, so that no iron can flow into them, as would be the case were the blast interrupted in the position of figure 1.

The inventor says: I do not confine myself to the precise details specified, provided that the peculiar character of my invention be retained.

I do not claim injecting streams of air or steam into molten iron for the purpose of refining iron, that being a process known and used before.

I *claim* the conversion of molten crude iron or of remelted pig or finery iron into steel or into malleable iron, without the use of fuel for reheating or continuing to heat the crude molten metal, such conversion being effected by forcing into and among the particles of a mass of molten iron currents of air or gaseous matter, containing or capable of evolving sufficient oxygen to keep up the combustion of the carbon contained in the iron till the conversion is accomplished.

No. 15,750.—JOHN B. WICKERSHAM.—*Improved Construction of Iron-Fence Posts and Ties.*—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The double ripped post or tie, cornered and mortised upon opposite and corresponding sides, as specified, in combination with the inclined corner key *E* for holding and crimping the rail, as described.

2d. I *claim* so constructing the fence tie and key above named, that it may be attached to a wood in order to take up the lax tension of wire and flat-hoop iron, and thus act as a compensator for the expansion of the metal when used for fences, as set forth.

No. 16,186.—SILAS S. PUTNAM.—*Improvement in Machines for forging Iron*.—Patented December 9, 1856.

The bar of iron to be forged is supported by rest M; motion being imparted to the machine, the cam D is rotated and brought to bear upon the opposite pair of the hammers E F, G H, which are alternately released and brought together with a powerful blow by the springs K, the cam being so adapted that one pair of the hammers is out of the way before the others fall.

Claim.—The arrangement of the four hammers operating in pairs, in the manner set forth, and actuated by a single central cam, as described.

No. 16,083.—HENRY BESSEMER.—*Improvement in Smelting Iron Ore*.—Patented November 18, 1856.—England, August 25, 1856.

The furnace as represented in the engraving being properly heated, a charge of molten iron is introduced, and blasts of air under a heavy pressure are caused to enter the molten mass through the tuyere pipes *b*: the oxygen of the air produces the effect on the crude iron as described in Henry Bessemer's patent, No. 16,082, and the intense heat produced by the combustion of the carbon of said crude iron causes the carbonaceous iron ores which are charged into the furnace above the crude iron to be reduced to crude iron and to sink to the bottom of the furnace, where they in their turn cause the ores above them to be reduced in the manner described; the tuyere pipes *a* serve to introduce a blast of air into the heated mass of carbonaceous iron ores.

Claim.—I am aware that it has been heretofore proposed to force into blast furnaces carbonaceous gasses or solid carbonaceous substances with the blast, for the purpose of adding to the effect of the fuel otherwise supplied to such furnaces, or for the purpose of assisting in the reduction of ores containing oxyd of iron, and I mention this fact in order that it may be fully understood that I lay no claim thereto. Nor do I confine myself to any particular form of furnace or apparatus for carrying into practical operation my said invention, provided that the peculiar features thereof be retained.

I *claim* the described new process of obtaining iron from a charge of ore in a furnace, viz: by means of molten iron underlying such charge, and by air, oxygen, steam, or a gas containing oxygen forced into the molten iron to such an extent as to effect the reduction of the charge or the abstraction of the metal therefrom without the employment of ordinary carbonaceous fuel.

No. 15,159.—WILLIAM BERTRAM, assignor to JOHN W. COCHRAN.—
Improvement in Welding Iron Plates.—Patented June 17, 1856.
 England, December 21, 1854.

Figure 1 represents a lap of two sheets of iron welded together according to this invention. Fig. 2 represents two portable furnaces with two parts of iron, which are about to be welded together in a position opposite to and between the mouth of the forges to receive a welding heat; *b b* are openings to receive the end of a pipe through which a blast is forced into the vessel *a a* and through the ignited fuel, by which a flame will be forced through each outlet *c c*, against the parts to be welded. The hammers are kept in contact with the plate by springs *S S'* and struck by hand hammers.

Claim.—Welding the separate faces of such bars or plates together by pressure or concussion, while at the same time they are subjected to opposite blasts of heat, in the manner herein set forth.

No. 14,412.—RICHARD SAVARY.—*Improvements in Puddling Iron.*—
 Patented March 11, 1856.

The metal, when melted, is conveyed from the cupola by the conduit *C* into one or more of the furnaces. When a sufficient charge has run in, a stopper in the conduit serves to shut off the stream; the conduit is removed, and the puddler proceeds to work the iron in the usual way until it comes to nature, when, instead of dividing it into masses to be balled separately, he rolls it up into a convenient shape and removes it from the furnace to be worked as other puddler's balls.

Claim.—The arrangement of the cupola *A* and puddling furnaces *B B*, &c., constructed and operating as herein set forth.

No. 14,114.—ABEL PEVEY.—*Improvement in Remelting Iron Scraps.*—
 Patented January 15, 1856.

The iron dust is confined in a vessel enclosed on all sides to prevent its being wafted away by the blast, which vessel will melt with or little after the cast-iron dust contained in it, and consequently effectually melt all the dust.

Claim —The within described cast-iron retaining vessel, with one or more perforations through it, or otherwise formed, the vessel being for receiving and retaining the iron dust, and then be enclosed on all sides, so that both the vessel and the cast-iron dust that it contains will be melted together, essentially in the manner and for the purposes fully set forth.

No. 14,827.—THOMAS H. POWERS.—*Improvement in Furnaces for Smelting Iron.*—Patented May 6, 1856.

The air, being heated in the vault 3, passes through pipe 2 2 2 into the furnace at 4 over the molten metals, mingles with and increases the intensity of its heat. 6 represents a lever for regulating the draft.

Claim.—So arranging the pipe 2 2 2 in connexion with the combustion chamber and stock as described, that the air passing through the pipe shall be heated and disengaged in the manner and for the purpose set forth.

No. 15,247.—O. W. MINARD.—*Improved Brass Kettle Machine.*—Patented July 1, 1856.

As the bed-carriage moves longitudinally from the mandrel, the pin *r* of the upper carriage sliding in the groove of the diagonal bar *x*, the clamps *o o'* move back from the axis of the forming-roller *e e*, and thus keep the inner surface of the disc of metal firmly in contact with the surface of the forming-roller. The diameter of the forming and working rollers *e* and *k* is not in the proportions of the spur-wheels *i* and *j*, but the forming-roller is relatively greater, in consequence of which the surface of the forming-roller will travel faster than the surface of the working-roller; and as motion is imparted to the metal disc by the bight of the two rollers, it follows that the metal disc must slide on one or the other, and it will slip on the one which is the most polished; hence by making the forming-roller with the smoothest surface, the inside of the kettle will be burnished, &c.

Claim.—The method substantially as specified, of polishing or burnishing either of the surfaces of the metal during and by the rolling action, by causing one of the rolling surfaces to move faster or slower than the other to produce a slip, as set forth.

Also, in combination with the forming *e e* and working-rollers *k*, giving to the carriage which carries the clamps *o o'* with the disc of metal a diagonal movement to keep the inner surface of the metal in contact with the forming-roller during the rolling action as described.

No. 15,961.—EDWARD C. BLAKESLEE, ENOCH PLATT, Jr., and EDMUND JORDAN.—*Improved Machine for making Brass Kettles.*—Patented October 28, 1856.

The blank being placed against the rim B, a revolving motion is imparted to the pulley D, which causes to revolve the die A and rim B. The reducing-rollers *a* roll over the blank and reduce it gradually to the decreasing thickness desired. Then by revolving the wheel H the male die E will force the metal into the female die A, and by turning the screw-nut *c* the reducing-rollers are forced towards the rim B; this operation is continued until the die E is forced to the bottom of the die A, when the kettle is perfectly formed.

Claim.—The combination of the revolving female die A and its disc or rim B B with the male die E, when these are combined with the adjustable reducing rollers *a a*, and the whole is constructed, arranged, and made to produce the result, substantially in the manner and by the means set forth.

No. 14,696.—O. W. MINARD.—*Improvement in making Brass Kettles.*—
Patented April 15, 1856.

The working roller *h*, when the work commences, stands opposite the end of the working mandrel *a*², and the holding mandrels *d* and *d*¹ are brought into such a position as to bring the plate to be wrought between said roller *h* and the end of the working mandrel *a*². The holding rest *k* is made to slide towards and from the roll *a*² upon the base *k*¹, which is moved along the ways *b* by the screw *m*. This movement prevents pressure and chafing at one point where the end of the roll *a*² bears, and aids also in drawing the bottom into shape. The loose sleeve *S* holds out that part of the plate to be wrought in front of the roll and prevents its crimping.

The bearings of the holding mandrels *d d*¹ rest on a frame *e*, which turns on a point at *e*¹, by which it is connected with a sliding frame *e*², which moves along upon the ways by means of the screw *f*. The loose disk *j* is forced up against the plate on mandrel *d* for the purpose of bringing the bottom of the kettle to be wrought gradually into shape.

Claim.—The employment of the clamps or holder in combination with the working rollers for drawing or working, or their equivalents, all arranged, adjusted, and operating substantially in the manner described, for the purpose of forming a disk of metal into a kettle as specified without employing a mould or former therefor.

I also claim the combination of the centre-piece *d*¹ for holding the disk of metal and disk *j*, by which the bottom of the article being manufactured is formed by the combined action of the disk *j* and drawing or working apparatus.

No. 14,887.—FREDERICK J. SEYMOUR.—*Improvement in making Brass Kettles.*—Patented May 13, 1856.

The dies *d* and *e* are first attached to the ring *h* and lifted with the male die *g*; a disk of metal is now placed on the die *c* and the drop *a* forced down which forms the metal into the shape corresponding with *c*. The form *c* is then changed by adding in succession the dies *d* and *e* to it. The size of the kettle will determine how many rings will be needed to form the female die and the consequent number of operations required to bring the blank kettle into the required shape.

Claim.—Forming brass kettles or similar articles from disks of metal by the successive operations herein set forth, commencing at the bottom and smaller part of said kettle and shaping the same at once, and then gradually forming a drawing in the sides by means of dies.

No. 15,772.—O. W. MINARD.—*Improvement in making Brass Kettles.*—
Patented September 23, 1856.

To trim a sheet of metal and cut it into rings, the metal should be placed between the clamps, and the axis of the clamp mandrels should be placed at an angle of 90 degrees with the axes of the cutter shafts,

which will bring the plane of the metal to a right-angle with the face of the shears; the hinged piece K should be lifted to the position K¹, and the part of the metal to be trimmed should be inserted beyond the edges of the cutters *b* and *b*¹, then the piece K should be brought back to bring the cutter *b*¹ to a cutting position, and the shears started. The article held between the clamps will revolve and be trimmed by being in contact with the cutters while they are in motion.

Claim—The use of rotary shears or cutters, having a hinged or sliding piece, constructed and operating as described, to carry one of the shafts and one of the cutters from a cutting position, and to quickly and accurately replace it when desired.

No. 15,031.—LINUS YALE, jr.—*Improved Lock*.—Patented June 3, 1856.

The curb C and wing C¹ attached is revolved every time the lock is turned by the key B; and as the wing C¹ strikes the tumbler A at the notch and raises it sufficiently to pass under it, like an even-bitted or straight key, it follows the key, and always removes its impression. The tumblers A are notched near their corners *a*¹ *a*¹, in order that the longest bits *b* *b*, with the exception of the shortest of the key B, shall produce the same impression.—(See dotted lines 1, 2, 3, 4.)

Claim.—1st. The peculiar form of the tumblers A, or an equivalent form, in combination with a changeable key.

2d. The rib or wing C¹.

No. 15,708.—HENRY D. RUSSELL.—*Improved Lock*.—Patented September 9, 1856.

By turning the door-knob upon stem D, either point of the crescent E catches the pin upon the back of bolt C, and forms, with the edge of said crescent, an inclined plane, upon which the pin S slides, to draw the bolt C and its attachment; the main bolt B, made fast to it, being locked by cross-bar F. When the key which passes through the opening G is turned, the cross-bolt F locks between the stationary pins I and J, and prevents the main bolt from being operated by the smaller bolt C.

Claim.—Liberating the knob and its stem from all connexion with the main bolt, in freeing the crescent plate E, by the movement of the smaller bolt C, as specified, produced by the cross-bar F, or its equivalent, operated by the key of the door; the whole constructed and arranged substantially, as set forth.

No. 14,209.—S. J. TRASK.—*Improved Alarm Lock*.—Patented February 5, 1856.

In order to withdraw bolt H, the key F is passed through keyhole *e* and through wheel D, and, as the key is turned, the wheel D will also be turned, and the wheel will operate the levers E E¹, and cause

the bell C to be struck by the lever E¹. When the key is in line with the keyhole *f*, in the partition plate B, the key is shoved through the latter, and the point of the key passes into a hole in spring G, and this spring is shoved outward from the plate, (see position of G, represented by dotted lines in fig. 2,) till the projection *h*, on said spring clears the notch *i* in the bolt, when the bit will enter the bit-notch *i*¹ in the bolt. The key being again turned, the bit will move back the bolt. The lock may be unlocked from the inner-side without a key, by operating the spring G, by means of the knob I, so as to clear the notch *i*, and moving the bolt by the knob J. The plate L can be so turned, (see positions of L, represented by full and by dotted lines in fig. 1,) by means of a button, as to overlap the spring G, and prevent its being shoved out; thus serving as a check, and giving additional security.

Claim.—The use of the spring G and rod *j*, when used in connexion with the plate L, arranged and operated in the manner set forth.

No. 15,168.—JULIUS CONE.—*Improved Alarm Lock.*—Patented June 24, 1856.

The disc *p* is secured to the knob shaft A and carries a pin *d*, which when the knob shaft is pushed towards the bolt L enters a slot *e* whereby the bolt is actuated. When the bolt is drawn into the lock, the edge of the slot *k* enters a notch *j*, so that the drawer may be opened by pulling upon the knob of the lock; but when the bolt is not forced in, the pin *d* will not be retained in the slot if the knob is pulled.

The notch *l* cut in the disc *p* is so situated that when it is brought to the fork *b n* of the ward spring M, and the disc *p* pushed inward, the pin *d* will enter the slot *e* in the bolt. When the disc is in the fork *b* and the knob shaft is drawn out or pushed but slightly, the alarm will be sounded.

The projection *m* on the scape wheel N strikes the fork *n*, and thus acts as a stop to prevent the alarm from unwinding.

The object of the notches on the periphery of disc *p*, and the hooked projection O on the bolt L, together with the spring P, is to enable a person who sets the lock to move the notch *l* a certain distance from the fork *b*, so that he may, when he wishes to open the drawer, move it back again the same number of notches, and thus unlock without striking the alarm.

Claim.—Disconnecting the knob shaft A from the latch bolt L, thereby dispensing with a key, key hole, separate key bolt, and all devices for operating a key bolt.

I also *claim* placing the alarm spring E and scape wheel N upon the knob shaft itself when combined with the arrangement for connecting said knob shaft with and disconnecting it from the alarm, so that said alarm may not interfere with the ordinary use of the lock simply for a latch.

I also *claim* the disc *p*, constructed and operating in connexion with the bolt, alarm, and "ward spring" M, substantially as described and for accomplishing the various purposes specified

I also *claim* the ward spring M, constructed and arranged substantially in the manner and for the purposes herein set forth.

I also *claim* the notch *j* in the knob shaft, in combination with the slot *k* in the bolt, when arranged and operating substantially in the manner and for the purpose herein described.

No. 14,958.—EZEKIEL M. HENDRICKSON.—*Improved Lock and Key*.—Patented May 27, 1856.

The handle D, to which the arms F are hinged, and the stem E slide within the hollow case C. The projection G is intended to turn a collar H, and thus operate upon the bolt P, by means of arm I and link J, when all the other parts are in their right position.

The levers N, suspended in the interior of cylinder L, are so situated in relation to projections O in the fixed back of the lock that, unless moved by the pressure of the stem E, the revolution of L will be prevented. The bolts *k k* have recesses in their sides into, which when locked smaller bolts are pressed by springs.

The operation of locking consists simply in pressing upon the knob R, which detaches lever P, and allows the bolts *k* to be pressed out by the springs S S.

The inventor says: I do not claim the employment of one or more jointed arms on a key, such being the construction of what is known as the night latch; but I *claim*, 1st. The construction and use of the key above described, which spontaneously projects slender arms F through a revolving cylinder L, for the purpose of simultaneously detaching catches from the bolts. And 2d. The combination of the key, or the mechanical equivalent thereof, with the revolving cylinder L, the check levers N, the locking levers P, and the springs S S, substantially as described and for the purposes set forth.

No. 14,178.—EDWARD KERSHAW, assignor to Himself and HENRY M. HOOPER & Co.—*Improved Cell Lock*.—Patented January 29, 1856.

This arrangement of bolts, notches, and studs allows of all the doors being locked or unlocked at once, and also of any one of them being unlocked while the remainder are locked.

The inventor says: I do not claim the invention of a single locking bar or bolt, so made and applied to the wall above the door-openings of a series of prison cells, as to be capable by its longitudinal movement of either locking or unlocking simultaneously all the doors of said cells; but I *claim* the combination of the bars E and H having notches at certain proportioned distances, as described, operating in connexion with the studs D on the cell door, in the manner set forth.

No. 15,136.—CHRISTIAN KNAUER, assignor to WARWICK, ATTERBURY, & Co.—*Improved Door Lock*.—Patented June 17, 1856.

The lock bolt and its tumbler F are operated from the key hole K, which is made so that the key may be inserted either way. The key,

when turned within either of the curves $r^1 r^2 r^3$ or $s s^1 s^2$ of the tumbler, lifts the tumbler and then moves it sideways in such a manner that the throw of the tumbler is equal in whichever way the key may be inserted. The lock bolt, being connected by means of the pin 9 with the tumbler, is moved the same distance. The lock bolt, when in locked or unlocked position, is securely kept in its place by the tongue u of the tumbler, butting against the projection v , on the guiding-block m . When, however, the lever tumbler is lifted up, the tongue u comes above the projection v , and the groove t opposite it; the tumbler is then allowed to move sideways. When the lever tumbler is moved downwards, the groove t^1 gets opposite the projection v , whereby the tumbler is set free to move sideways. As soon as the tumbler arrives at the end of its stroke, the tumbler is forced by the action of the spring G into the position again, that the tongue t is opposite the projection v , whereby the bolt is kept securely in its place.

Claim.—Actuating the bolt E of a right and left hand lock by means of a tumbler F , which has a vertical motion, for the purpose of freeing and securing the bolt, and also a vibrating motion for throwing the bolt in or out the tumbler being arranged in relation to the key in such a manner that the bolt will be thrown out the same distance in whichever way the key may be inserted.

No. 15,783.—THOMAS SLAIGHT.—*Improvement in Lock and Freight Cars.*—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving. The bolt H can be released from the jaws B by inserting the key in the lock, and turning the tumblers E and plate D , thereby distending the jaws and allowing the bolt to be withdrawn.

Claim.—The hasp G , fitted over the socket F of the lock, and secured thereon by the plug or bolt H , which passes through the hasp and socket into the lock, substantially as described.

No. 14,675.—M. NEWMAN, 2d.—*Improved Lock Hasp.*—Patented April 15, 1856.

When the bolt e is projected by turning the key, it enters between the projections $f f$, and thus the ear of the bar C is securely kept in the eye of the staple B , and the removal of the hasp A cannot be effected without the previous removal of the ear holding it in place.

Claim.—The use of the swing-bar C , constructed as described, in connexion with the locking bolt e and the hasp A , with projections $f f^1 f$ thereon, for the purpose of retaining the hasp when on the staple, substantially in the manner set forth.

No. 14,030.—I. J. OLDIS.—*Improved Padlock.*—Patented January 1, 1856.

The front plate of the casing A has two key holes made through it—one of which is opposite the lever D , and the other opposite the lever E

When the lock is in a locked state, the lips $d d^1$ on the spring $C C^1$ are in the notches $e e^1$ in the end of the bow or shackle B . In order to unlock the lock, the plate F^1 is turned or moved, and the true key hole is exposed, which is in line with the lever D ; the plate F^1 being moved till its aperture j is in line with the lever and key hole. The key is then inserted into the recess e in the lever D , and the key is turned to the right, and the lip d^1 of the spring C^1 will be thrown from the notch e^1 in the end of the bow B , and by pressing the pivot i inwards, the lip o on the spring H will catch over the upper end of the spring C^1 and hold the lip d^1 free from the notch e^1 .

Claim.—The use of spring catch H and lever D , arranged and operating in connexion with the lips $d d$ and springs $C C$, as set forth.

No. 15,270 —SOLOMON ANDREWS.—*Improved Padlocks.*—Patented July 8, 1856.

The bolt or hooks A are drawn back from the shackle by means of the inclined or bent end of the opening spring e , represented in a detached view in fig. 2, operating obliquely upon a small wire passing through the hooks A , which is brought into action by any one of the bits of the key through the intervention of the tumbler springs d ; either one of which being lifted will lift the opening spring e , because it rests its broad surface upon them, and is kept in contact at its heel by the pressure of one end of the shackle spring c upon it. The using of all the bits of a key for tumbler action, whilst either one acts as a bolt bit, adds much to the security of a lock where only a small key-bit surface can be had.

Claim.—Making a spring to answer the double purpose of a spring and ratchet tumbler, which I denominate a spring tumbler.

The opening spring, being a spring brought into action by the key, for the purpose of drawing back the hooks or unlocking the locks.

The combination of the spring tumblers with the hooks, in the manner herein set forth, holding back the hooks when unlocked, so as to constitute a perfectly racked tumbler lock, a self-locking one.

No. 16,224.—SOLOMON ANDREWS.—*Improved Case for Padlock.*—Patented December 16, 1856.

A plate is punched out, as represented in fig. 1; then raised at its edges, and the keyhole b punched in it and bent at right angles, so as to form the case of a padlock, as shown in fig. 2.

Claim.—The making of the body or case of a padlock of one piece of wrought metal.

No. 14,616.—WILLIAM MAURER.—*Improvement in Locks.*—Patented April 8, 1856.

Fig. 1 represents the lock in a locked state. To unlock the lock, the catch E must pass out of the upright portion of the slot f in the bolt D , and into or through the upright portions of the slots $e e$ in the

tumblers B B, and, of course, the upright portions of the tumbler slots must be brought in line with each other. To effect this, the tumblers B are moved by turning the bit C (by means of a crank A¹) till the slots *c* are in line, so that a key B¹ may be inserted in them, said key having recesses or slots *a*¹ in its sides, as shown in Fig. 3. When the key is inserted, the springs *d* are allowed to throw the tumblers in such positions that the upright portions of the slots *e* will be in line, as the slots *a*¹ in the key are so made as to cause the slots *e* in the several tumblers to assume the proper position. The upright portions of the slots *e* being in line, the catch E is thrown free from the upright portion of the slot *f* in the bolt and into the slots *e* in the tumblers, by the spring *g*, as shown in fig. 2, and the lock is unlocked.

Claim.—The tumblers B having slots *c e* made in them, in combination with the slotted bolt D, bolt-catch E, arm or lever F, and bit C; the above parts being arranged as shown and described for the purpose specified.

No. 14,896.—JOSEPH M. LIPPINCOTT.—*Improvement in Locks.*—Patented May 13, 1856.

The lock is opened from the outside by turning the wrench *d*. The cogged-bit *m* enters the teeth on the edge of the locking bolt; and the tumblers *t* being adjusted in the tumbler-chamber *f* by the key, the locking-bolt *i* is drawn back, the fence *h* entering the horizontal groove. The pin *r* in the locking-bolt *i* carries with it the latch-bolt *p*, the tongue of which projects beyond the front of the lock. So soon, however, as the wrench *d* is released, the spring *s*¹ acting on the end of the latch-bolt *p* springs it forward again, and the pin *y* entering the slot *z* carries forward also the locking-bolt *i*, withdrawing the fence *h* from the groove *g* in the tumbler-chamber *f*, when the spring *s*, acting on bolt *l*, raises all the tumblers, deranging the grooves and preventing the retrocession of the locking-bolt *i*, without the use of the key from the outside.

Fig. 1 represents a view of the door-lock, the top and sides being removed to exhibit the interior.

Fig. 2 is a similar view, excepting that the bolts, wrenches, and latch-spring are removed.

Fig. 3 is a view of the fence-bolt or locking-bolt.

Claim.—The combination of the spring-bolt *l*, tumblers *t t*, and fence *h*, constructed and arranged in the manner and for the purposes described, together with the combination therewith of the locking-bolt *i* and latch-bolt *p*, so that the lock may be readily opened from the inside without a key, and yet requiring a key to open it from the outside.

No. 14,848.—WILLIAM H. AKINS.—*Improvement in Locks.*—Patented May 13, 1856.

The shaft F is caused to revolve until the clutch *u* strikes against the clutch-pin *o* of the first revolving disk C, then continuing on until the

other end of the clutch of the latter comes in contact with the head of the clutch-pin of the second disk; and so on, until the party is in a condition to arrange the slot of the last disk in a line with the slots of the flanges *c* and that of the inner end *n* of the tongue *E*, for which purpose the shaft is turned until the proper number on the plate *G* is brought opposite the point of the arrow *g*. The shaft is then revolved backwards to bring the clutches of the disk *f* and first disk together on the other side of the clutch of the second disk, and until the proper number is brought opposite the point of the arrow *g*, when the slot of the second disk will also be set; and so on, until all the slots will be in a line with the tang of the lock-bolt *E*.

Claim.—Arranging a series of revolving slotted disks *C* upon a fixed neck or stud *D*, so that each in turn shall be made the means of adjusting the slot of the other when operated upon by another disk *f*, or its equivalent, secured to a revolving shaft *F* and index *G*.

2d. Altering the respective numbers of two or all the disks *C*, by the simple change of an adjustable clutch from one hole to another, substantially as and for the purposes described.

3d. The method of discovering the proper numbers to open the lock, substantially as specified.

No. 15,124.—MICHAEL ERB and F. C. GOFFIN.—*Improvement in Locks.*—Patented June 17, 1856.

The key *F* is inserted in the opening *d*, and the knob *H* is turned so that the shoulders *c* of the tumblers will pass into the slots *e*, in the key. The slots *a*, in the tumblers, being thus brought into line, the bar *G* may be shoved back. When the cross piece *f* is within the tumblers, the knob *H* is turned backwards, in order to allow the key *F* to be withdrawn; and by again turning the knob, the slots *a* will again be brought into line, and the bar *G* may be shoved back and forth.

The inventors say: We do not claim the sector tumblers with slots cut in them at varying points, for they have been previously used; but we *claim* placing said tumblers upon the shaft *C*, as shown, viz: the end tumblers *D*¹ being attached permanently to the shaft, and the tumblers *D* placed loosely upon it, with washers *b* between them, whereby a positive action or movement is given to the tumblers, the use of springs dispensed with, and the lock rendered durable, simple, and economical to manufacture.

No. 15,239.—HENRY ISHAM.—*Improvement in Locks*—Patented July 1, 1856.

In the engravings fig. 1 represents a face view of the lock, with the cap plate removed, and with the bolt thrown out.

Fig. 2 and 3, cross sections taken at the lines *B b* and *A a* of fig. 1, and looking in the direction of the arrows.

Fig. 4, a section parallel with the face, and taken at the line *C c* of fig. 2, with the bolt thrown in

Fig. 5, a view of the key.

The inventor says: I do not wish to be understood as making claim broadly to the engagement of rotating tumblers with the key slides by the throw of the bolt. But I *claim* moving a series of rotating cogged tumblers $g\ g\ g\ g$, at right angles to the line of motion of the bolt b , by means of a slot k in the bolt, or any equivalent thereof, operating on the shaft or spindle i of the tumblers, whereby the cogs $h\ h\ h$ on said tumblers can be made to engage the cogged racks t on the key slides n , previously set by the key before the stop-pin j on the bolt leaves the slot J in the tumbler, and will so remain engaged, while the bolt continues its movement to carry said stop-pin to some distance beyond the periphery of the tumblers, so that in any attempt to pick the lock the said stop-pin shall not rest against the periphery of the tumblers to admit of feeling, as it is termed, to bring the tumblers in succession to the required position to allow the lock to be picked, as described.

I also *claim*, in combination with the method of operating the tumblers by the throw of the bolt, and giving to the bolt the capacity to move after the tumblers have been engaged with the key slides to carry the stop-pin some distance beyond the periphery of the tumblers, substantially as described, the employment of a stop or hold-fast a^1 , operated by the bolt to lock or hold fast the key slides or tumblers before the stop-pin on the bolt reaches the periphery of the tumblers, substantially as described, whereby the slides and tumblers, if not previously arranged by the proper key, will become locked in their disarranged condition before the stop-pin on the bolt can reach the periphery of the tumblers to feel when the tumblers are brought to the required position by a pick.

I also *claim* forming the bit of the key of a series of sector pinions $w\ w$, &c., which may be shifted to change the combination or permutation, substantially as described, in combination with a series of cogged rack slides n for operating the tumblers, substantially as and for the purpose specified.

And, finally, I *claim* the notched collar d^1 on the key stem, in combination with the lipped spring c^1 at the entrance of the key hole, whereby the key cannot be taken out of the key hole without turning it entirely around to give to the key slides their entire range of motion every time the lock is opened and shut, and thus avoid the possibility of determining the required position of the key slides by the wear of the moving parts, which would be the case if only moved each time to the distance required for unlocking, particularly if the same combination should continue to be used for a considerable length of time.

No. 15,489.—JOSEPH M. LIPPINCOTT.—*Improvement in Locks*.—Patented August 5, 1856.

When the key b is inserted in the key hole, which is immediately over the perpendicular grooves o , in the wards n , the projections on the bit of the key rest on the edge of the tumblers t . The key is then forced down, the blade passing into the perpendicular groove o in the

wards, and depressing each tumbler to the depth of the projection on the bit of the key. As these projections are of different length, each tumbler is depressed to a different depth in the tumbler chamber; and when the key is pressed down as far as it will go, each horizontal groove g^2 comes exactly to the level of the grooves g and g^1 . The fence h is now entered through the passage formed by the conjunction of the grooves g g^1 g^2 , and the bolt i may be drawn back by turning the pinion m by means of wrench d . So soon, however, as the bolt i is shot back, and the fence h has reached the end of the groove g , it has fairly entered the aperture n in the tumblers, which, being deeper than the groove g^1 , permits the tumblers to rise if the pressure of the key is removed, and they are forcibly thrown up by the reaction of the spring bolt l , which was forced back by the pressure of the tumblers when the key was inserted. The tumblers thus all rise to the level of the wards, and the grooves g^1 in the tumblers being no longer in range with the groove g in the wards, the fence h is fastened in its place, and the bolt i cannot be thrown forward without again using the key to adjust the tumblers, as before.

Claim.—I claim the use of a stationary tumbler chamber with movable wards and tumblers, in combination with the fence H , constructed and arranged substantially as set forth.

I also claim the use of an aperture n in the tumblers t , into which the grooves g^2 , for the passage of the fence, open, but distinct therefrom, for the purpose of allowing the tumblers to resume a position in which the grooves are out of range, while the fence is yet engaged in the tumblers, substantially in the manner and for the purpose set forth.

No. 15,589.—HJALMAR WYNBLAD.—*Improvement in Locks.*—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I am aware that eccentric discs and ward plates have been before known and used, and I do not claim them; but I *claim* the arrangement of a series of eccentric discs F , separated by stationary ward-plates E , with each of said discs having an orifice J at the centre of its motion fitted to the shape of the bits of the key K , and moving upon and guided by a segmental standard G , and moved at the same time and to the same distance within a frame D , attached to and working a bolt C of a lock, as herein set forth.

No. 15,800.—G. W. COPPERNOLL.—*Improvement in Locks.*—Patented September 30, 1856.

When the bolt is shot the secondary key is drawn entirely within the main key K , which is inserted to the distance represented in fig. 4, this causing it to rest upon plate q^1 which forms a part of tumbler d . The key is then turned to the right, causing the movement of the tumblers and the consequent rotation of the shafts e e^1 and f f^1 . These shafts

remove the guards $g\ g^1$ and $h\ h^1$ from both sides of the circular opening r . As tumbler d moves, the plate q^1 slides from under the main key and unmasks the sliding guards $o\ o^1$; the secondary key is then allowed to descend and enter the opening between the slides $o\ o^1$; this key is then turned, causing the slides to part and admit the circular portion of the key to pass; the secondary key then moves onward through the circular openings q and r , and reaches the eccentric I, which it engages and operates. To shoot the bolt the guards are withdrawn and the eccentric J moved in the opposite direction.

Claim.—1st. The swinging guards in front of the bolt chamber, actuated by the fixed portion of the key, in combination with the sliding guards, actuated by the secondary key, arranged and operating as and for the purposes specified.

2d. The eccentrics, I and J, arranged relative to each other and the bolt as set forth, and actuated by the secondary key after the removal of the guards, substantially as and for the purposes specified.

3d. The combination of the swinging guards, tumblers, and spring catches, operating substantially as specified.

No. 15,962.—WILLIAM H. BUTLER.—*Improvement in Locks.*—Patented October 28, 1856.

The case A is fitted on the pin H, and when the circular portion of the case is upward the bolt B will catch into the recess l and the door is locked, one side of the case projecting over the edge of the door which opens outward. The bolt B is withdrawn from the recess l by forcing the key E downwards upon the tumbler c and plate i , and the case A is drawn outward till the bolt B catches into the recess k . The case A may then be rotated on the pin H and the door opened.

Claim.—I do not confine myself to any precise arrangement of the bolt b , or tumblers, or mechanism connected therewith, for the parts shown may be modified in various ways.

I claim placing the case A on an arbor or pin H, which is secured in the jamb or casing of the door, the parts being arranged as shown, or in an equivalent way, so that said case may be secured or locked on the arbor or pin, or allowed to be detached therefrom without the aid of a key, whereby the device may be used as a lock or as a button, as described.

No. 14,618 —ANDREW PATTERSON.—*Improvement in Door Locks.*—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use and employment of a vibrating bolt b , which shall act as a brace between the seat in or the shaft on which it vibrates, and the jamb-piece or keeper $y\ y$ into which it falls, without any other leverage on any other point; and this I claim without reference to the manner in which, or the machinery by which, the said brace bolt is operated.

No. 14,714.—JOHN B. ERB.—*Improvement in Door Locks*.—Patented April 22, 1856.

When the knob H is pressed downwards in the oval slot K, it operates on the slide G, whereby the bolt J is drawn backward without danger of putting the lock out of order.

The night key is made tubular, so that when it is put through the aperture L, the handle of the key is pressed inwards and forces out the wing N, (which flies back to its place in the tube when the key is being withdrawn,) which fits in the ward M of the aperture L, and draws back the bolt J.

Claim.—The devices of the knob H, oval slot K, and semi-circular slide G, as they operate upon the bolt J, all in combination, substantially as herein described.

No. 15,456.—THOMAS B. ATTERBURY and WILLIAM WARWICK, assignors to WARWICK, ATTERBURY, & Co.—*Improved Face-Plate for Locks*.—Patented July 29, 1856.

The nature of this invention consists in using for a lock A a separate face-plate B, which is shaped in such a manner in relation to the case of the lock that it can be placed on either of the two sides of said case, whereby the lock may be used on doors which open to the right or left hand side, the face plate being always fastened outside.

Claim.—The separate or distinct guard or face-plate, of such a form in relation to case or skeleton frame of a lock or other fastening, that it may be put on either of the two sides of the said case or frame, whereby either of the sides can be made the face of the said lock or fastening, substantially as described.

No. 14,059.—JAMES HARRISON, JR.—*Improvement in Padlocks*.—Patented January 8, 1856.

This lock is unlocked in the following manner: The tube *s* of the key is inserted in the hole *w* and pressed upward, so that the end of the tube will press upwards the rods *o o* till the recesses *r r* are opposite the apertures *n n* in the bolt C. The rod *t* is then pressed upward, and the end of the bit *u* will enter the aperture *m* and throw the bolt C back free from the leg *b*, which may then be withdrawn from the case A, and the shackle turned. The stop *h* is forced upward by the spring *i* opposite the end of the hole *d* to keep the bolt C within its hole. The shackle is locked by simply forcing the shackle down within the case A.

Claim.—The combination of the shackle B, sliding bolts C, and rods *o o*, when arranged as herein shown, and fitted with a solid body on case A, constructed of suitable metal substantially as described, whereby a strong, durable, and burglar proof lock is obtained.

No. 16,089.—WILLIAM A. IVES.—*Improved Spring Latch and Lock.*—Patented November 18, 1856.

The cylindrical case A of this lock is provided with key holes in such a manner that by entering the key through the key hole C the bolt may be locked or withdrawn from the inside only, while by passing a key through the key hole E the bolt may be locked or withdrawn from the outside. The knobs H serve to withdraw the bolt when not locked, as in the usual manner.

Claim.—The securing the bolt on the inside, when the same key serves to turn back the bolt, and also to hold it back when desired, and when the said key or any additional key used is so constructed and arranged that it will swing or turn entirely within the tube or cylinder, and be made to operate substantially as described.

No. 15,113.—JOSHUA K. INGALLS, assignor to MATTHIAS H. HOWELL.—*Improvement in Metal Beams.*—Patented June 10, 1856.

The inventor says: I am aware that a wrought-iron beam has been made with wrought-iron corrugated web, said “corrugations resisting compression in the direction of their length.” I do not, therefore, claim that; but I *claim*, 1st. The corrugated web B when cast with or upon the top flanch A, and arranged with the bottom flanch C or tie in such a manner as to afford flexibility to the cast portion of the beam, to accommodate its action to the tension of the wrought portion.

2d. The tapering form of the corrugations in their height, which gives a right line when the web attaches to the top flanch, with which it acts in resisting compression, and which increases the breadth of said corrugations, and consequently the flexibility of the web where it touches the bottom flanch or tie, with which it acts in resisting extension.

No. 15,286.—CHARLES DICKINSON and WILLIAM BELLAMY.—*Improvement in securing Pearl Ornaments in Handles of Cast Metal.*—Patented July 8, 1856.

The pearls C are circular plates or disks, having holes through their centres, in which the thimbles *b* are fitted; these thimbles are constructed of tin, or sheet-iron coated with tin; the thimbles are sufficiently long to project a short distance each side of the pearl disks. The pearl disks with the thimbles are inserted in the mould; the melted metal is then poured into the mould, which, when full, is immediately inverted; and as the metal quickly cools on the outer side, the inner part will run out, leaving a sheet or hollow handle D, and the metal will close around the thimbles, as shown, (figure 2,) firmly securing the pearls in the handle, while the edges of the pearls project out all around beyond the sides of the handle.

Claim.—Inserting or securing the pearl disks or plates C in the handle

D, by placing the pearl disks in grooves *a*, formed in the mould; the pearl disks having thimbles *b* fitted within them so that the metal will close around the thimbles.

No. 16,118.—WILLIAM W. HUBBARD.—*Improvement in Lathes for Planing Metal*.—Patented November 25, 1856.

In this machine the tool slide B moves on rails C, which project from the sides of the frame A; and said frame is provided with covers E, which serve to protect the slides from the chips and dust which are produced during the operation of the lathe.

Claim.—Arranging the tool-carriage slides or supports on the vertical sides of the frame or bed, in combination with arranging above such slides, and so as to project from the sides of the frame and over the slides, substantially as explained, coverers or guards, whereby the slides are protected from dust, chips, or other matters, as specified.

No. 16,250.—JOHN S. SANSON and WILLIAM P. FARRAND.—*Improved Machine for making Metallic Slats for Blinds*.—Patented December 16, 1856.

The sheet iron is run upon the bed B until arrested by stops *f*, when the descent of beam B¹ gives the form to the slat at the same time that the shears *m n* separate it from the sheet. The stops *f* are each lifted by a spring *e* when the beam B¹ is raised; as the beam falls these stops are driven into the bed, and are held in that position by the points *i* on plate *l* pressing against them by the force of springs *g*; as the beam reaches its greatest elevation, the plate *l* is drawn longitudinally by the lever *d* releasing the stops, and permitting their springs to lift them.

Claim.—The combination of bed beam and shear with the spring stops, constructed, arranged, and operating substantially as and for the purposes set forth.

No. 16,166.—JAMES SMITH, Jr.—*Improvement in Casting Metallic Tubes*.—Patented December 2, 1856.

The metallic core, composed of the segments *c e d*, can be withdrawn from the tubular ingot by removing the plugs *h* and rings *g* from the ends of the core, and by pressing the part *e* towards the axis of the core, so as to detach it from the others, which, by this process, will be loosened from the ingot.

Claim.—The method of making the metallic mould core, viz: of removable separate sections or staves *c d*, and a narrow trapezoidal or wedge-shaped spring or stave *e*, the whole being arranged and held together by rings *g g* and plugs, or their mechanical equivalents, and made to operate in the manner substantially as specified.

No. 15,899.—JAMES PERKINS and WILLIAM H. BURNET.—*Improved Machine for bending Metal-Pipe*.—Patented October 14, 1856.

The pipe to be bent when taken from the furnace is inserted between the stationary roller *b* and the movable former *d*; the end of the pipe being fastened to the former *d*, the same is rotated and the pipe coiled around it in the spiral form of the groove in which it is laid. This spiral causes the carriage *e* to advance as the pipe is wound on.

Claim.—The mandrel substantially as described with the traversing roller *h*, or its equivalent, for bending coils of metal pipe, and in combination therewith the furnace, in the manner and for the purposes set forth.

No. 15,413.—E. C. CLEVELAND.—*Improvement in Metal-Planers*.—Patented July 29, 1856.

B represents the cross-bar, which contains the screw C that passes through the nut of the stock D, to which the tool is attached. On one end of the screw C there is placed loosely a pinion E having a pawl *a* on its inner side, which pawl catches into a pinion *b* on screw C. Pinion E, gears into pinion F on shaft *c*, the latter having its bearings attached to the bar B. A bevel pinion *d* attached to the opposite end of shaft *c* meshes into pinion *e* placed loosely on the vertical shaft H. Pinion *f* meshes into wheel *j* of the box J, which is placed over disc *i*; the plate *k*, is attached to box J by screws *l*, and the washers *m* of raw hide are placed between the disc *i* and plate *k*. The dogs *o* are fastened in a groove on the periphery of the box J, and are adjusted in such a manner that when they strike against the arm *h*, the box J is prevented from turning when the article to be planed passes underneath the cutter and the shaft I continues to rotate. When the dogs *o* are not in contact with arm *h*, the box J revolves with shaft I, by means of the friction caused by plate *k* and washer *m*, upon disc *i*, which arrangement affords the means of stopping the lateral motion of the tool when the article to be planed passes under it.

Claim.—The friction box J attached to the shaft I, as shown, and provided with adjustable dogs, *o o*, the box J being connected with the shaft H by the gearing *j f*, and operating conjointly with the gearing E F *b* and pawl *a* on the shafts *c c* H and the arm *h* which projects over the box J as shown, for the purpose specified.

No. 15,379.—JOSHUA MASON.—*Improved Cutter-Stock Metal Planers*.—Patented July 22, 1856.

As the bed E moves back and forth, the cutter-stock C will be adjusted or swung into an inclined position in consequence of the pins *f* striking against the spring *e*, and the stock swinging in the slot *g* of the plate L, will be adjusted at the end of each stroke so that the proper inclination will be given the tool D.

The inventor says: I do not claim a swinging or adjustable cutter-stock irrespective of the arrangement of the same; but I *claim* the

cutter-stock C, placed within a rim or band B, which is suspended by journals *a* within the frame or box A, the stock being provided with a sliding or adjustable plate L provided with a slot *g*, and the stock adjusted or operated at the end of each stroke of the bed by the pins *ff*, on the side of the bed, and the levers G H I K, the above parts being arranged as shown and described for the purposes specified.

No. 15,538.—CHESTER VAN HORN.—*Improvement in Planing Metal.*—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and illustration. The object in having the beam D and consequently the tool attached to the uprights B is, that by this arrangement pieces wider than the bed plate A may be planed, as one side of the machine is wholly unobstructed.

Claim.—Supporting the cross slide F, by means of the uprights B B, with the beam D fitted between them at one side of the bed plate A and framing C, and having either one upright E or two at the opposite side of the bed plate and framing, substantially as described for the purposes set forth.

No. 14,279.—GEORGE H. CORLISS and ELISHA HARRIS.—*Improvement in Rolling Metal.*—Patented February 19, 1856.

A¹ is the article rolled on this machine; the operation of the machine will be understood from the claims and engravings. The position of the roller, represented by full lines, is the one where the latches L are thrown outwards, and the roller G is at the upper end of the oblique slots *e*. The broken lines represent the roller when confined to the lower end of the oblique slots by means of the latches, so as to be in contact with and operating upon the article to be rolled.

Claim.—The combination of the reciprocating roller carriage F with the guides D D and a table C, substantially as herein described.

2d. Raising the roller G for the purpose of placing the work between it and the table C, by fitting the roller carriage F to the oblique slots *e e* in the sliding-boxes E E, and providing latches L L, operating as described to secure the carriage in the sliding-boxes during the rolling operation, but to loosen them and allow them to run up the slots as herein set forth, at the termination of the return movement of the roller.

3d. The arrangement of the crank-shaft J relatively to the rolling table C and roller carriage F, substantially as herein described for the purpose set forth.

No. 14,332.—JOHN WRIGHT.—*Improvement in Bending Sheet Metal.*—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The combination and arrangement, substantially as herein shown and described, of the setting down, bending, and finishing rollers or wheels H J, with the table or disc F for operation together, and in relation thereto and each other, in the manner and as specified; the one wheel I having a projecting ledge or head, for the purpose of gauging the "double seam," and clipping or holding it from "opening" whilst being bent, essentially as set forth.

No. 14,049.—REUBEN BRADY.—*Improved Machine for Sheet Metal Bending*.—Patented January 8, 1856.

The plates G are adjusted the required distance on the plate F, and motion is imparted to the roller A in any proper manner, and the metal sheets are passed between the rollers, and as they come in contact with the bed D they are bent in a cylindrical form; the apron or shield I prevents the curved sheets from coming in contact with the operator, and causes them to fall off the opposite side of the machine.

Claim.—I do not claim the concave bed and rollers, irrespective of the arrangement herein described; but I *claim* placing the upper roller F in an adjustable or swinging frame E, and attaching the guide and feeding-plates G G to said frame, when the above parts are used in connexion and operate conjointly with the permanent roller A and concave bed D for the purpose specified.

No. 15,964.—GEORGE W. BURLING.—*Improvement in Machines for Bending Sheet Metal*.—Patented October 28, 1856.

The blocks A and E are placed, respectively, on each side of the turns of the sheets of metal, so as to press the turns between them by operating the levers C and D; then, by turning the lever F, the folding block B is brought down into the position of fig. 3. The apparatus is now moved forward until the portion of the seam thus folded coincides with the paning part of the apparatus that is between 5 and 6, fig 1. The block B is now moved into the position of fig. 4, and the portion previously folded becomes paned. Then, by detaching the loose plates *e* and *m*, and thus dropping the apparatus, and by then repeating the entire operation as described, the double fold of the metal, as represented in fig 5, is obtained.

Claim.—1st. The combination of the bars A and E with the folding bar B, the same being arranged and operating substantially in the manner and for the purpose set forth.

2d. The loose plates *e* and *m*, in combination with the bars E A and B.

No. 15,069.—HENRY C. DOLE.—*Improved Shears for Sheet Metal*.—Patented June 10, 1856.

By raising the lever *e* to a perpendicular position, the blade *d* will be raised clear of the lower blade C, by reason of the upper part of *b*

being made to slide in the groove *f* as the wheel works on its axis at *a*. When the handle is brought down to a horizontal position, the shears will be quite closed by pressing the lower edge of the eccentric wheel upon the top of the blade at *b*. The other eccentric wheel *N* works on its axis *y* in the same manner, with this difference: the pitman *J K* being attached further from the axis in *N* than it is in its moving power *H*, it will, therefore, not move *N* as far as *H* is moved, and, consequently, the shears will not rise and fall at the back end as much as at the front end.

Claim.—The employment of pitman *J K*, levers and eccentric wheels *N H*, constructed as described, for operating the blades *C D*, in connexion with the adjustable gauge *O*, in the manner and for the purpose set forth.

No. 14,878.—SYLVESTER B. MILLER and EZRA W. WHITEHEAD.—*Improvement in Working Sheet Metal*.—Patented May 13, 1856.

The nature of this improvement consists in substituting pressure and rotation to one of the dies instead of a drop and percussion force for forming and stretching the material.

The inventors say: We do not claim a rotating die or counter-sink for making depressions by cutting and removing the material, as the means for doing so are well known and are for another purpose; but we *claim* the employment of the die *E*, when constructed and used in connexion with the lower die *N* for extending or stretching thin metal plate by pressure and rotary motion combined.

No. 14,738.—SAMUEL R. SHEPARD and ORSON W. STOW.—*Improvement in Working in Sheet Metal*.—Patented April 22, 1856.

By turning the nut *I* the outer edge of the guide *H* may be moved nearer to or further from the lip *g* of the roller *G*, by means of the screw *j* and spring *J*.

Claim.—The adjustable rotating guide *H*, attached to either of the rollers *G*.

No. 14,916.—J. B. HOLMES.—*Improvement in Working in Sheet Metal*.—Patented May 20, 1856.

The corrugated sheet of zinc, to be gauged and bent, is laid on the metal plate *3*, attached to the frame of the machine; the top plate *2* is then brought down upon it and holds the sheet of zinc to its original corrugated shape, while the grooved eccentric bending-shafts *4 4* revolve and bend the ends of the sheet of zinc down at right angles.

Claim.—The use of corrugated plates *2* and *3*, operating in connexion with the eccentric bending and gauging shafts *4 4*.

No. 14,115.—EZRA RIPLEY.—*Improvement in Casting Metals*.—Patented January 15, 1856.

M represents the fluid metal, which enters the mould A through the aperture B. The partition C is formed of plates of metal, with vents or air-passages *a a* formed between them, for the purpose of communicating with the expanding air-chamber G.

The inventor says: I do not broadly claim exhausting the mould of air previous to, or while running in the melted metal; nor the use of moulds having vents arranged for the escape of confined or compressed air; nor do I claim the substitution of a simple expansive air-chamber for an air-pump, in casting metals by atmospheric pressure.

I *claim* instantaneously removing the air which ordinarily fills the mould into an air-tight expansive chamber, through crevices, like air-passages, arranged for the purpose, immediately after the open mouth of the mould is immersed in the fluid metal; all as herein described and specified, whereby the advantages herein set forth are attained.

No. 16,001.—ROBERT ANDERSON and AARON H. VANCLEVE.—*Improvement in Cutting Metals*.—Patented November 4, 1856.

The nature of this invention consists in combining a frame H, on which is erected a moveable carriage B, with a shearing or punching machine, of any known construction, by which the plates can be moved on a parallel line with that of the edges of the shears and punch, and the plates can thereby be cut and punched perfectly straight. Also, in combining with a shearing and punching machine, of any known construction, a traverse carriage R, to which pattern guides S are attached, for the purpose of cutting or punching metallic plates in reverse or irregular curves. Also, in combining a revolving table M with the traverse carriage R, and a shearing or punching machine, by means of which plates can be cut in circles.

Claim.—The use of the parallel table B, revolving table M, and traversing table R, in connexion with machinery for punching and shearing metals, when the said tables are constructed and operated in the manner described for cutting and punching straight, curved, or irregular forms of metals, as set forth.

No. 15,733.—JOHN FEIX.—*Improvement in Granulating Metals*.—Patented September 16, 1856.

The melted metal is poured into the inner vessel 2, and at the same time jets of water pass through the elbow-shaped tubes of pipe 3 into the cylinder 1, and coming in contact with the melted metal granulate the same, the water passing from the cylinder 1 into the space between cylinders 1 and 2, and escaping through a hole in the bottom of the latter.

Claim.—The use of the outer and inner vessels 1 and 2, when constructed and operated in the manner described, in connexion with the pipe 3 and its elbows, as set forth, for keeping the water in circulation and for granulating the metal.

No. 15,190.—JOHN MOONEY.—*Improved Tool for Cutting Metals.*—Patented June 24, 1856.

The nature of this invention consists in constructing the cutting-off tool in the form of a blade of uniform width, and enclosing the same in clamps in such a manner that when placed in the tool-post of the lathe, &c., and the set-screw brought to bear upon it, it may be held firmly, as if constructed in one piece as formerly.

Claim.—The use of the blade or cutter O, of a separate piece of metal, inserted in an adjustable clamp G.

No. 14,551.—WILLIAM F. BROOKS.—*Improvement in making Seamless Metal Tubes.*—Patented April 1, 1856.

This invention is an improvement of the roller dies for which letters patent were granted to Timothy D. Jackson, under date of February 28, 1854.

At *b* fig. 1, is shown a section of the mandrel and of the metal *m* in the process of being formed into a tube. A is the forming die. For effecting the loosening the tube is forced through a second roller die B, in which the face of each roller is concave, as shown at *c* fig. 2, whereby the tube is slightly distended by the pressing apart of the spaces between the ribs *a*.

Claim.—Grooving or removing the corners of the radial rollers R, so that a series of parallel projections *a*, or ribs, will be formed upon the tube, the rollers relieved from undue strain, protected from choking, and the reduction of the tube and the withdrawal of the mandrel *b* therefrom facilitated, substantially as set forth.

No. 15,348.—JOHN J. SPEED, jr., and JOHN A. BAILEY.—*Improvement in making Seamless Metal Tubes.*—Patented July 15, 1856.

The short thick tubular casting or ingot R, out of which the tube is made, is placed on the mandrel L¹, one end of it being connected to the circular plate O; and motion being given to the shaft C, a vibrating movement radially to the mandrel is communicated to the dies H J K, the two plates *de* forming a toggle, and the upper die H when radiating inwards forcing down the two lower and lateral dies J K, till the latter arrive at a solid bearing or seat, when the circle formed by the combined curvatures of the inner faces of the three dies complete and close the two lower dies J and K by their relative position to the upper die H, effectually restraining the compressed ingot from giving out laterally, and thus effecting an equal reduction of the tube.

Claim.—We claim the three encircling and radially hammering or pressure dies, when arranged relatively to each other, and operating together on the tubular ingot while stationary, and in combination with the intermittent feed to the ingot or partially formed tube on or over the mandrel, alternate with the compressive action of the dies.

No. 15,513.—THEODORE GOMME and CHARLES EUGENE AUGUSTE BEAUGRAND.—*Improvement in Manufacture of Sheet-Metal Ware.*—Patented August 12, 1856.

This invention relates to the stamping of sheet metal by means of a puncheon f , while the surrounding parts or edges are held with more or less tightness between two rings d . The puncheon f is operated upon by means of a piston b^1 , moving in a cylinder b and driven by steam. The rod f^2 can be made to slide within the piston rod b^2 , and is attached at its upper end to a plate f^1 , which serves to hold the work in place and subsequently to disengage it.

Claim.—The use of the rod f^2 , sliding within the stamping puncheon f , for giving motion to the plate f^1 , on the upper part of said puncheon, so as to hold the work in place, and subsequently to disengage it; the whole operating for preserving the thickness of the metal uniform when acted upon by the puncheon between the grooved and bevelled rings, as described.

No. 14,724.—JAMES JONES JOHNSTON.—*Improvement in Flasks for Moulding.*—Patented April 22, 1856.

The table C is raised or lowered inside the box by means of guides D D, a rack, and pinion, as seen in fig. 3. The patterns P are fixed on the follow board N, which is placed on the table C, and kept in position by pins O. The cover plate R has openings which correspond with the patterns P.

Claim.—The employment of the table C, follow board N, and plate R; the whole, when adjusted by the vertical movement in guides, being for the purpose set forth.

No. 14,637.—JOHN DEMAREST, assignor to "THE J. L. MOTT IRON WORKS."—*Improved Core-Bar for Pipe Moulding.*—Patented April 8, 1856.

The nature of this invention consists in making the core-bar b with end plates or wings d and e fitted on by a slip, which plates rest on the surface of the core-box a in making the core, and on the face of the flask in the act of moulding, to sustain and hold the core-bar in a true position without the use of bearers, so that the surface of the pipe inside and out may be cast smooth.

The inventor says: I am aware that core-bars have been made with wings between which to pack the sand, and which bind and hold the sand forming the core, and this I do not claim as my invention. And I am also aware that core-bars have been made with branches connected therewith by dove-tail joints, so that the branches of the core-bar can be separated in the pipe after the pipe has been cast; but those heretofore made are required to be sustained centrally in the mould by inside bearers, which injure the castings. I do not, therefore, wish to be understood as making claim to the connecting of the branches with the main core-bar by dove-tail joints irrespective of the side wings

or plates which rest on the surface of the flask to sustain the branches in a true central position without bearers; but I *claim* making core-bars for moulding curved elbow or branch pipes, and other such like hollow castings, with sustaining plates or wings at the ends, substantially as and for the purpose specified.

No. 15,054.—DANIEL DODGE.—*Improvement in Nail-Machines.*—Patented June 3, 1856.

The two hammers G G receive their motion from the cams H H; they are forced apart by the spring K.

The shaft B is put in motion, and the end of a bar is introduced between the hammers, resting it upon spring L on top of anvil D, until, by the repeated action of the roller and hammer, it is brought to the requisite point and length.

Claim.—The use of the roller F, the anvil D, and the hammer G G, constructed and operating either in combination with the spring L or without it.

No. 15,910.—PERRY A. WILBUR.—*Improvement in Nail-Machines.*—Patented October 14, 1856.

The nail plate is fed to the cutting tool by means of the feeding tube *s*, and the blank is cut from the plate by means of the cutting blades *u* and *s*; it is then caught by the movable gripping jaw Z, and jammed up against the stationary jaw 8, whilst it is being headed, by means of the heading tool 12. The nail being completed and the gripping jaw Z drawn back, a delivering arm 16 hung to a vertical rock shaft 17 is forced forward by lever 18, which extends back to a spring 19, operated by cam 2; so that at proper intervals, and as regularly as the nail is finished, it is thrown out of the grippers by said arm 16.

Claim.—The arrangement of the cutting, gripping, heading, and delivery apparatus, with regard to the nail-plate feeder, so that the whole may be operated from one cam shaft substantially in the manner set forth.

No. 15,938.—PERRY A. WILBUR.—*Improvement in Nail-Plate Feeding.*—Patented October 21, 1856.—Antedated October 14, 1856.

The nail plate is placed in the feeding tube S, represented in detail in figures 3, 4, and is fed to the cutters by the follower *u*, operated upon by pinion M³ and rack N. The object of the long pinion M³ is to admit the lateral adjustment of the frame L and carriage M, for the purpose of increasing or diminishing the head and point of the blank. The semi-rotating motion of the feeding tube S, for the purpose of exposing the reversed sides of the nail plate to the tool *u*, is accomplished by cam H causing to vibrate lever *g* on its fulcrum *h*, imparting a reciprocating movement to pitman *z* and oscillating toothed sectors

Y and X. The forward and backward motion of the feeding tube is accomplished by the arrangement of a lever *l*, the end *o* of which slides between the projections *p*. As the cam 7 presses down the end of said lever the latter is pressed forwards, having free play as the bolt *m* passes through a slot in said lever, and thus the bearings *T*¹ of the feeding tube resting on the cross-piece *k* are moved forward and backward. The process of cutting, griping, heading, and delivering the nail by this machine is described in patent No. 15,910 issued to P. A. Wilbur, 14th October, 1856.

Claim.—Giving to the tubular nail-plate feeder its rising and falling, semi-rotating, and forward and backward movements, substantially in the manner and for the purpose set forth.

I also claim the lateral adjustability of the nail-plate feeder, to change the angle at which the nail-plate approaches or passes under the cutting-die, for the purpose of giving more or less head or point to the nail; whilst said feeder continues to receive its multiple motion as set forth.

No. 15,515.—ADOLPHUS HEDDAEUS.—*Improved Nail-Plate Feeding Apparatus.*—Patented August 12, 1856.

The principal features of this invention will be understood by reference to the claims and illustrations; a detailed description thereof would take up too much space to be given here.

Claim.—1st. Connecting the feeding apparatus with the nail machine by ball wrists or universal joints in some point or points situated in a vertical line through the centre of the nail when cut, and of locating all the points of such connexion in this vertical line for the purpose of giving the feed apparatus a lateral motion in the arc of a circle, whose cutter is in that vertical line, whereby the feed apparatus may be accurately adjusted without stopping the operation either of the feeder or the nail machine.

2d. The use of an elliptical spring or steel hoop, as the bearing for the other front end of the screw, in combination with the sleeve *s*, ball *a*¹, cam *f*¹, and spring *g*¹, for the purpose of allowing the turning of the nail plate and drawing it back while turning.

3d. The use of the large wheel *G*, constructed as described, in combination with the pawl *t* and pinion *p*, for the purpose of communicating the requisite motion to the feed screw and nail plate, together with the cam wrench *l*¹ to lower the spring *b*¹ of the pawl *t*, whereby the feed apparatus may be instantaneously stopped, without interfering with the action of the nail machine or detaching the one from the other.

No. 14,474.—JOHN P. SHERWOOD.—*Improvement in Nail-Plate Feeding Machines.*—Patented March 18, 1856.

The main shaft *K* revolves and with it the eccentric cam *J*. The friction wheel *Z* travels around in the concentric groove, and communicates a reciprocating motion to the sliding carriage *A* by means of

bar I. Around the shaft C are placed the slotted cams D D, forming a groove in which the stationary pin U works, thus compelling the shaft C to make a quarter revolution at each stroke. W is the handle of the nippers which hold the nail-plate N. It passes through the centre of the hollow shaft C, and has a screw cut on the back end which works in a female screw, formed by the jaws G G.

Claim.—The use of the grooved eccentric cam J with its friction roller Z and bar I, in combination with the slotted cylindrical cam D, nipper-handle W, and female screw, constructed and arranged as described, and operating to produce the peculiar movements necessary for feeding the nail-plate in nail machines, in the manner and for the purposes hereinbefore set forth.

No, 14,011.—RICHARD H. COLE.—*Improved Nut-Box.*—Patented January 1, 1856.

The movable segments *c c* which form the sides of the nut-box are placed in a cup-shaped case which has a perforated bottom A, and is provided with a rim *l*. The segments *c c* are adjusted and secured in any desired position within their enclosing case by means of the eccentrics *d d*, and the respective set-screws *e e*, *f f* and *g g*. The segments have projecting flanches *h h*, on their inner edges faced with steel so as to form cutting edges. The engraving represents a four-sided nut-box, which, by augmenting the number of segments, can be converted into a six or eight sided one.

Claim.—Having thus fully described my improved adjustable nut-box, what I claim therein as new and desire to secure by letters-patent is: The arrangement of the segments *c c*, the eccentrics *d d*, and the set-screws *e*, *f*, and *g*, with each other, and with the case A *l*, substantially in the manner and for the purpose herein set forth.

No. 14,452.—ROBERT GRIFFITH.—*Improved Nut Machine.*—Patented March 18, 1856.

The heated bar of iron is placed on the table C, the pressing block M forces it against the ledge of the table, while the punches *p* descend to make the holes. Before the punches are withdrawn, the saws *h* are brought forward to sever the nuts. As soon as the saws and punches are withdrawn, the pressing block is withdrawn by the motion of the cams *n n*, and is raised by the levers *o o*, acted upon by the cams *r r*. The arm *d* depresses the lever *c*, thereby tilting the table and discharging the nuts.

Claim.—The use of the compressors M, punches *p*, saws *h*, cams *w* and *r*, levers *o* and *c*, crank *d*, and travelling-head *b*, constructed, arranged, and operating as described, for the purpose of making nuts from heated bars, as herein set forth.

No. 15,001.—RICHARD H. COLE.—*Improvement in Nut Machines.*—
Patented June 3, 1856.

The machine being in motion, the cam P strikes against the side p^1 of the sliding plate G , and carries the punch d towards the mouth of the nut-box; and at the same moment the cam c produces a rearward motion of the bottom j of the nut-box. As soon as the sliding plate H is brought in contact with the projection Z , the punch d brings the blank nut in contact with the bottom of the nut-box, shaping the nut. The punches e and f^1 are now forced into the hot nut blank, until they nearly meet in the centre of the same, by means of cams b and o ; the hole is thus formed in the nut blank by forcing the metal from the centre thereof into the body of the same, thereby causing the nut formed to be thicker than the bar from which it was cut. The punch f^1 is carried outward by cam o , whilst the punch e is carried forward by cam b through the nut, depositing the wad. The cam a strikes now the surface m^1 in the plate F and withdraws the punch e , while the bottom of the nut-box is carried forward to discharge the finished nut by means of cam c and plate H .

Claim.—The arrangement of the round punch f^1 within an aperture in the angular punch d , at the same time that a round punch e is arranged within an aperture in the bottom j of the nut-box, when the said round punches are combined with movements which cause them to act jointly in perforating holes in the nuts formed in said nut-box, substantially as herein set forth.

I also claim the joint arrangement of the angular punch d and its exterior round punch f^1 with the bottom j of the nut-box and the interior round punch e , when the said bottom of the nut-box is combined with a spring, or its equivalent, in such a manner, in relation to the said angular punch d and the round punches e and f^1 , that the action of the said parts in forming a nut will cause the completed nut to be thicker than the bar from which the blank was cut, substantially as herein set forth.

No. 15,861.—WILLIAM E. WARD.—*Improvement in Nut Machines.*—
Patented October 7, 1856.

A detailed description of this machine would take up too much space to be given here. The main features of the invention will be understood by reference to the claims and engravings.

Claim.—The two punches g and h , arranged side by side and operated substantially as described, for punching the central hole, cutting off the blanks from the bar, and discharging the same, substantially as described, in combination with the two holes or two dies, so that a hole is punched in the bar for another nut during the continued motion of the punch to discharge the nut which was cut off during the previous part of the same motion.

Also, in combination with the punching and cutting operation, or either, and with the mandrel a^1 , or its equivalent, for entering the central hole of the nut blank, the employment of the spring jaws q q , or

the equivalents thereof, for transferring the nut blank from the die to the mandrel, and there holding it until the mandrel enters the holes, substantially as described.

Also, the holding of the nut blank on the mandrel, in combination with the swages b^1 and b^2 , for swaging the faces of the nuts, substantially as described.

Also, in combination with the mandrel a^1 for holding and turning the nut blanks, substantially as described; the employment of the hammers q^1 q^1 for hammering or swaging the edges of the nuts, substantially as described.

Finally, the combination of the swages b^1 b^2 for swaging the faces of the nuts with the hammers q^1 q^1 for forging the edges of the nuts, substantially as specified, by means of which the metal is thoroughly compacted in all directions, and a good finish given to the entire blank.

No. 16,142.—ROBERT GRIFFITHS.—*Improvement in Nut Machines.*

Patented December 2, 1856.

Motion being imparted to the machine, the heated iron is introduced, as represented at z , and the tables J and K holding the dies n and m are caused to approach each other by the action of cams c and d , and the iron is confined between them, at the same time that the cutter bars separate it into the blanks required. The blanks are now acted upon by the opposite punching bars N , operated by the cams t . The punching bars continue to advance until the shoulders of the punching bars have forced the strippers R against the nuts, so that the latter become pressed between the ends of the cutter bars and the stripper plates R . As the punching bars recede, their ends are released from the nuts by means of stripper R .

Claim.—1st. The manner, substantially as set forth, of securing the punching and cutting bars between the sliding plates, for the purpose specified.

2d. The combining of the punching and cutting bars with the strippers, the said strippers being whole or divided, and operating in either of the methods specified.

No. 16,188.—CHARLES RATCLIFF.—*Improvement in Nut Machines.*—

Patented December 9, 1856.

The operation of this machine is as follows: The rolls a and a^1 being rotated in the direction of the arrows, and the end of an iron bar B being inserted, a portion suitable for a nut will be cut off; then, as the rolls revolve, the punch d , being forced outwards by a cam on the shaft of the respective roll, forms the eye, the punching being received and held by cavity g . The nut, being formed, is expelled at a suitable part of the revolution by the moving outward of the sliding-die c .

The inventor says: I do not claim any peculiarity in the manner of punching, nor in the operation of the dies, separately considered.

I *claim* the two sets of dies, counter-dies, and punches, arranged alternately upon the peripheries of a pair of rolls, substantially as set forth.

No. 15,003.—RICHARD H. COLE.—*Improvement in Making Nuts*.—Patented June 3, 1856.

The nature of this invention will be understood by reference to (No. 15,001) Richard H. Cole's improvement in nut machines, patented June 3, 1856.

Claim.—Forcing a portion or the whole of the metal displaced in forming the holes in the nuts into the bodies of the nuts, by which I am enabled to make the nuts thicker and more compact than the bar from which they are cut, all substantially as herein set forth.

No. 15,004.—RICHARD H. COLE and JOHN C. COLE.—*Improved Machine for Polishing Metallic Nuts*.—Patented June 3, 1856.

The surfaces of the nuts are smoothed off by the action of the cutters *i i* of the planing-wheel *D* as they are carried in a guiding channel *f* under the centre of said wheel upon pins *c c* which project from alternate links of an endless chain, composed of the links *a* and *b*, as shown. The nuts are supported by the side plates *d d*, which rest on plates *e e*, the plates *d d* being secured by means of set-screws *g g*.

Claim.—The arrangement of the planing-wheel *D* and the nut-carrying endless chain with the partially inclined and partially horizontal groove *f*, the sustaining plates *e e*, and the edge guiding plates *d d*, or their equivalents.

No. 16,039.—WILLIAM H. PLUMB.—*Improvement in Crushing Rollers for Ores, &c.*—Patented November 4, 1856.

The roller *C* is mounted on permanent bearings, and the position of the roller *g* can be adjusted by moving the boxes *d* in the bearings *b¹* to one or the other side, and securing the same in any desired place. The bearings of roller *g¹* are supported by two arms *f* extending from the adjustable shaft *e* to the shaft of the roller *g*. By this arrangement the pressure of the roller *g* upon roller *C* can be regulated to any desired degree.

Claim.—The construction, combination, and arrangement of the stationary and movable roller adjusted to the work to be done, in the manner and for the purposes set forth.

No. 14,152.—WILLIAM BALL.—*Improved Ore Washer*.—Patented February 5, 1856.

The trough *I* receives a vibrating motion while the tubes *E* revolve, through which the water enters the trough. The water is admitted in

quantity much greater than can pass through the holes *s*, and continually flows over the inner edge *q* of the trough. The pulverized ore rises sufficiently high to pass over the ledge *k*, when it is immediately washed through the holes *s* by the stream of water constantly passing through them.

Claim.—The trough *I*, when constructed with the ledge *k*, as described, and operated in connexion with a head of water kept above the level of the said ledge, in the manner herein set forth.

No. 14,388.—WILLIAM L. CARTER.—*Improved Ore Washer.*—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I am aware that a cylindrical vessel, with a current of water forced against the material passing through it, has been used for washing ores. This I do not claim. But what I do *claim* is, a conical vessel provided with shovels and pins, or projections, whose shaft is horizontal, and lower side inclined, so that water introduced at one end shall have a natural flow to the other end, and meet the ores as they pass in an opposite direction, to wash them, substantially in the manner and for the purpose set forth.

No. 15,544.—HEZEKIAH BRADFORD, assignor to HORATIO BOGERT.—*Improved Ore Washer.*—Patented August 12, 1856.

The lumps of ore are fed from hopper *g* into the inside of a rotary perforated cylinder *a*, armed on the inside with numerous teeth, which, as the lumps of ore are rolled over by the rotation of the cylinder, scrape and loosen the clay and other foreign substances, which are then washed off by the agitation of the water induced by the rotation of the cylinder. The lumps, when reaching the other end of the cylinder, are taken up by curved and perforated scoops *i*, which lift them up and discharge them through a central hole *h*, while the water drops back into the cylinder through the perforations in the scoops, and carries the foreign substances from the cylinder into the trough *k*, and through a discharge hole *p* in the bottom, which is governed by a valve *m*.

Claim.—I claim the employment of a hollow perforated cylinder rotating on a horizontal or nearly horizontal axis, provided with numerous pins or teeth on the inner periphery pointing towards the axis, combined with a feeding aperture and hopper at one end, and lifting scoops and delivery aperture at the other end, and with a water trough or vessel, within which the lower part of the said cylinder revolves, the said trough or vessel being provided with a delivery aperture controlled by a valve, all substantially as and for the purpose specified.

No. 15,827.—SAMUEL THOMAS.—*Improved Ore Washer*.—Patented September 30, 1856.

The material to be washed is thrown into the trough A at its lowest end, said trough being filled with water; and as the shafts B are rotated, the material is lifted up and carried forward at the same time by the spiral flanges *b*, entirely separating the ore from the other material with which it is mixed, and carrying it up to the delivery end of the trough.

The inventor says I am aware that an inclined revolving vessel has been used in washing ores, and that a single shaft provided with shovels and spiral flanges has been used. I do not claim either of these things, separate or combined.

But I *claim*, in combination with a stationary inclined box, the double shafts, with spiral flanges thereon, and turning in opposite directions, for lifting up and carrying forward the ores to the delivery, in the manner set forth.

No. 14,234.—THADDEUS FOWLER.—*Improvement in Sticking Pins in Paper*.—Patented February 12, 1856.

The depressions *a* in the plate C are suited to receive the pins, and are so shaped that the heads will not be above the surface of the plate. The ends of these depressions have a recess *x* for the reception of the pin-heads, and are scarfed out, as seen at *b*; so that any pins that pass down point foremost, even though they fall into the recesses, will readily pass out again, causing all the pins contained in the depressions to have their heads downwards. For the purpose of filling the depressions with pins, a number of pins are thrown upon plate C, which then receives a shaking motion, it being held at the same time slightly inclined. When the recesses are filled, the plate C is placed as shown at fig. 1. The holder D, with the crimped paper P upon it, is then turned round so as to rest flat on form C; it is then turned back to its first position, (the paper-holder and plate C being firmly held together,) when all the pins will rest in the depressions in the crimped paper, as seen at *i*. The form C is then removed, and the frame A turned around hinge *f f*, when the bars *g* will rest on the barrels of the pins, to hold them steady, while the bars *h* will rest against the heads of the pins; the paper-holder is then drawn forward (see arrow *y*) until the pins are inserted in the paper to the proper extent.

Claim.—The use of the form fig. 2 for separating, arranging, and spacing the pins, when combined with the paper-holder D for the purpose of transferring the pins to the prepared paper ready for sticking, when both are constructed, used, and made to produce the result, substantially as herein described.

Also, the combination of the paper-holders D with the frame A, when constructed, arranged, and used for inserting the pins into the prepared paper, substantially in the manner herein described.

No. 15,871.—LYDIA ATWOOD & CHAUNCEY O. CROSBY, administrators upon the estate of CHARLES ATWOOD, deceased.—*Improvement in Sticking Pins in Paper*.—Patented October 14, 1856.

A detailed description of this machine would take up too much space to be given here; the main features of it will be understood by reference to the claims and engravings.

Claim.—1st. The vibrating nippers V, armed with a knife or double inclined plane for separating the pins, turning them from a vertical to a horizontal position, as specified.

2d. The straight inclined conductor K, when combined with the nippers V, with their separating points as carrier, as described.

3d. The lipped driver K, for driving the pin along the railway or bed laterally into the groove to be stuck into the paper, when it acts upon the pin before the vibrating nipper lets go its hold.

4th. The lateral driver, or its equivalent, for the purpose of delivering the pin under the spring-holder y, as a means of controlling the pin until it is inserted into the paper.

5th. The combination of the sticking driver P and its guiding groove with the vertical crimping bars, when the bars permit the paper to pass over their ends vertically in the process of sticking pins.

6th. The feeding rollers $Y^2 z^2$, or their equivalents, for the purpose of holding the paper and controlling it at such a distance from the guiding rollers $x^1 x^1 x^2$, as will allow the paper to pass up and down without moving the spools while the rollers are in motion.

7th. The rollers and carriages which control the pins and paper, for the purpose of moving the paper forward intermittently, and up and down intermittently, to space off the rows of pins, and to space the distance between each succeeding pin in the same row, the ends of the paper resting on spools $Y^2 z^2$ dissected from the machine.

No. 15,877.—WALKER B. BARTRAM.—*Improvement in Sticking Pins in Paper*.—Patented October 14, 1856.

The operation of this machine is as follows: The paper is conducted over the top of the jaw P^* of the holder down below the jaws $P^* P$, and between the ends of the forceps O and bar Q, from whence it descends to the roller F, passing between said roller and the band d. Motion being then imparted to the shaft C, the paper is crimped by the crimpers I to form the creases which receive the pins, while the holder $P P^*$ is open. During the operation of the creasers, the box U receives its movement towards the pins in the lower part of the feeder, and its bars $y y^1$, after taking a sufficient number of pins, slide one by one under the plate U, and place the pins at proper distances apart in the slot v^1 of said plate. The crimpers now move out of the way, and the holder $P^* P$ comes in operation and seizes both the pins and the paper alongside of them, about the same time as the forceps O come in operation to seize the creasers; and then box U swings back to carry the separating bars from between the pins, and the plate T slides outward from the machine to make room for the descent of the driver L, which comes down and drives the pins through the crease, the holders open-

ing as soon as the heads of the pins have been received within the recesses in the face of the driver, and their points entered in the first crease in order to let the driver L pass down between them. The driver, after this operation, is quickly raised by spring 24, and the plate T is pushed up again to the feeder; after which the lever H, with its dog e, comes into operation on the ratchet G, and moves the wheel F, which takes away the row of stuck pins, and draws from the roll B a supply of paper sufficient to receive the next row. When the bars *y* move forward to take the pins, the outward bar *y*^{*} knocks away the stop-lever Y from in front of the pins. As the bar *y*^b moves from under the feeder towards the plate T, the pins in the feeder S are caused to follow it by the action of gravitation on those pins in the inclined part of the feeder. As the bar *y*^b reaches the point where the first bar *y* stood when the separator and spacer moved forward, the stop Y is thrown across the slot *v* between the front pin and the said bar *y*^b, and thus prevents the pins from moving any further, and retains the lowest pins in a position ready for the next operation of the spacer and separator.

Claim.—1st. I claim the separator and spacer, composed of a series of bars *y* *y*¹ *y*², etc., having a simultaneous movement at right angles, or nearly so, to the line of pins in the pin feeder, and to the line in which the pins are inserted, and a movement one after the other in a direction parallel, or nearly so, to the said line, and operating substantially as and for the purpose set forth.

2d. The construction of the driver L, with recesses in its face to receive the heads of the pins, and act in conjunction with the paper after the points of the pins have penetrated it, to serve the purpose of guiding the pins straight and parallel through the paper, thus enabling the holder to be opened to make room for the driver, substantially as described.

3d. The stop Y acting in combination with the separator and spacer, substantially as described, to retain the pins behind the separator and spacer after a number sufficient for one row has been taken from the feeder by the separator and spacer, but to be moved away by the separator and spacer.

4th. The bar Q operating in combination with the forceps *o o*, substantially as described, to form a second holder below the principal holder P P*, and more perfectly secure the upright and parallel position of the pins during the commencement of the driving operation.

No. 15,111.—JOHN I. HOWE and TRUMAN PIPER, assignors to the HOWE MANUFACTURING COMPANY.—*Improvement in Japanning Pins.*—Patented June 10, 1856.

The metal plate *h*, with the sheet of paper charged with pins, is placed on top of the frame *b*, with the sheet of paper above the plate, and with the heads hanging downwards. By turning the screw *e*, the frame is let down until that part of the pins depending below the plate is immersed in the compound. When coated, the plate with the pins

is put into an oven; when the pins are taken from the oven, the metal plate is turned up side down, and the sheet of paper drawn off, so that the pins will hang in the plate by their heads, which will allow of their being coated entirely.

Claim.—The inventors say: What we claim, as our invention in the process of japanning pins, is dipping a portion of the length of the pins *g* in the compound, whilst inserted in a sheet of paper *i*, and with one end downward, and then subjecting them to the baking operation, substantially as described, in combination with the second dipping and baking in the reversed direction, to japan the remaining portion.

And we also claim controlling the pin during the process, substantially as described, by sticking the pins into the sheet of paper, through holes in a plate of metal *h*, or equivalent substance, the said holes being of sufficient size for the free passage of the shanks or barrels of the pins, but not for the heads, so that after the first dipping and baking, by reversing the plate, and pulling off the sheet of paper, the pins will hang by their heads for the second dipping and baking.

No. 15,091.—J. B. PERRY.—*Improved Machine for Sticking Pins.*—
Patented June 10, 1856.

While the paper is being crimped and transferred from the crimper to the jaws, (patented 1855,) the cut-off has dropped one row of pins down against the plate B; the notched cross-bar D, by means of the lifting-rod C, commences its upward movement, striking the row of pins just back of the points, and slightly slipping lengthwise towards the head, tending to keep the pins firm in the notches, and against the conductor A, and carrying them with the plate upward until said plate rests upon the surface of the conductor. The conductor commences its forward movement by means of the same lever and cam, which gives motion to the fingers, (patented 1855,) and continues until the pin is thrust forward into the crimped portion of the paper. After the conductor commences its movement, and the pins enter the crimp, the cross-bar is released, and brought back quickly by the spring to its resting point, and ready for a new operation.

Claim.—1st. The movable conductor or conductors A, with notches for the head to hold the pins and push them into the crimped portion of the paper.

2d. The movable notched cross-bar to correspond with the notches in the conductors, and the movable plate, or its equivalent, to hold the pins in their proper place, while the pins are thrust to their place by the conductor.

3d. The combination of the movable conductor or conductors, the apparatus for changing the position of the points of the pins, and holding the same with the clamp or jaws which hold the paper while the pins are thrust through.

No. 15,112.—JOHN J. HOWE and TRUMAN PIPER, assignors to the HOWE MANUFACTURING COMPANY.—*Improved Machine for Sticking Pins*.—Patented June 10, 1856.

The attendant slides the grooved plate *d* forward and back under the channel-way *a* to charge the grooves with a row of pins. The whole row of pins is then forced forward through the holes in the plate *q*, and into the sheet of paper behind it, by a follower *t*. As the pins are pushed forward by the follower they are guided by the grooves *c* in the plate *d*; and as the points pass through the sheet of paper, it is sustained by a grooved bar *x* back of the frame which holds the sheet of paper. As the lever *p* is moved back to withdraw the follower *t*, the frame *h* is lifted, together with the pierced plate and sheet of paper, elevating the row of pins and presenting the next row of holes on a level with the grooved plate *d* to stick another row of pins.

The inventors say: We do not wish to be understood as limiting ourselves to the special construction and arrangement of the parts, as equivalent constructions and arrangements may be substituted within the range of our invention; but we *claim*, in combination with a guide-groove or grooves and a follower, substantially as specified, the employment of the sliding frame for holding and shifting the sheet of paper, substantially as described, that the pins may be properly spaced and inserted in the sheet of paper, at right angles, or nearly so, with its surface, as set forth. And we also claim, in combination with the guide-groove or grooves, follower, and holding and shifting frame, substantially as and for the purpose specified, the employment of a perforated plate, substantially such as described, and interposed between the guide-groove or grooves and the sheet of paper held in the frame, that the pins may be inserted simultaneously in the plate and in the sheet of paper.

No. 16,199.—LYDIA ATWOOD and CHAUNCEY O. CROSBY, administrators upon the estate of CHARLES ATWOOD, deceased.—*Improvement in Machines for Sticking Pins*.—Patented December 9, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features will be understood by reference to the claims and engravings.

Claim.—1st. The twisted inclined conductors, as described, as a means of changing the position of the pin, as specified.

2d. The falling railway *G*, as described, for the purpose set forth.

3d. The separating, measuring, and spacing bolts or instruments, terminating in a double inclined plane in the manner substantially as described.

4th. The retarding spring *e*, as described, for holding the pins in check upon the rails while being acted upon by the dividing instruments.

5th. The chuck for holding, guiding, and moving the paper, when made to operate as described, or in any manner substantially the same.

6th. The elevator or plate Q for raising, holding, and delivering the paper, in the manner and for the purpose specified.

7th. The connexion of the guiding grooves with the follower or driver, in combination with the falling railway G and the retarding spring e; and also of the guiding grooves and railway in combination with the dividing, separating, or spacing instruments used as specified, or in combination with the inclined conducting channel, as described.

No. 15,874.—LYDIA ATWOOD and CHAUNCEY O. CROSBY, administrators upon the estate of CHARLES ATWOOD.—*Improvement in Papering Pins*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Fabricating a new article of manufacture called diamond pin-cushions, by sticking pins in ranks or rows through a staple or U-shaped piece of paper, the heads of the pins projecting sufficiently far to allow the pins to be easily and conveniently withdrawn by the fingers for use. The pins being inserted upon two planes of the paper, with the heads projecting beyond the points a suitable distance to protect the points of the pins from being doubled or blunted, all the other portions of the pins being protected by the paper and sustained by it at a short distance from the heads and points by the paper making a solid mass of pins set in diamonds with regard to each other, but not in contact, and which usually contains the requisite quantity of pins for an ordinary paper for toilet use in a small compass, as specified and represented.

No. 15,404.—E. S. WOODFORD, assignor to JAMES R. KEELER.—*Machine for Sewing Pins upon Paper or any other Material*.—Patented July 22, 1856.

The pins are placed in a hopper attached to the upper end of the conductors A, and by a jarring motion a constant supply is shaken out upon the conductors; the body of the pin drops through the slot in the conductor, and is suspended by the head; a column of pins in the conductor is thus pressing against the separator B, which is turned by lever N sufficiently to let one pin at a time pass under it as often as required, dropping down the conductor into the turn-table C. The point of the pin, as it falls from the separator B, strikes a bar, throwing the head overlaying it horizontally in turn-table C.

The ratchet-bar S is now removed by lever T, carrying turn-table C around sufficiently to allow the pin to drop into the perpendicular conductor F, on the top of which said turn-table revolves. The pin now passes down the conductor F on to the periphery of wheels E; as wheels E are turned by eccentric L and lever N, the pins drop into the notches in the periphery of the wheels, and are brought down in front of the needles to be sewed upon the paper. The paper is upon roller O, and passes down in front of wheels E, bar S pressing against said wheels, holding the pins in the notches after they pass below shoe

v. The sliding plate G and 2, to which are attached the horizontal and perpendicular needles, is now driven forward and upward, sewing the pin fast to the paper, being still in the notches of the wheels. The feed motion is given to the paper by the partial revolution of wheels E, the pin last sewed being held in the periphery of said wheels by bar S, the wheels E receiving a constant supply of pins from conductors F, bringing them down against the paper to be sewed. The whole machine is operated by turning the crank I.

Claim.—The roller or separator marked B, made of India-rubber or other elastic substance. Also the turn-table, marked C, for receiving and changing the pin from one place or position to another, or their mechanical equivalents.

Also, the combination of one or a series of conductors for supplying pins in any desirable position, and a sewing machine of any suitable adaptability for sewing pins upon paper or any other material; but I do not make claim to either of these elements of the combination by itself.

No. 15,860.—CALEB C. WALWORTH.—*Improved Machine for Finishing Gas-Pipe Fittings.*—Patented October 7, 1856.

The operation of this machine is as follows: By moving the wrist plate *u* from the left to the right, all the tools C are made to approach the work *v*; and by depressing the lever F, a screw-nut in the collar *f* will be raised to engage the screw *z*. By now reversing the motion of the pulleys and by depressing the levers 2, which will cause the pulleys to rotate in the direction of the arrows, the nut and screw engaging, the mandrel *c* advances with a rotary motion, until the part *e* of the coupling advances beyond the action of the faces in the axial plane. When the coupling becomes unlocked, then the inclined faces of both parts of the coupling act against each other by the continued rotary motion of the mandrel; and consequently the part *e* being secured from further advance by the engagement of the tool in or against the work, the action of the inclined faces causes the part *d* and pulleys thereon to move backward, and by that movement, communicated to the shipper *b*, reverses the direction of the motion of the pulleys, which continue so to revolve, and withdraw the mandrels until the nuts run off the screws, which will now revolve without any further effect.

Claim.—The arrangement and combination of the machines operating substantially as described in a plane around a common centre, for the purpose of screwing or tapping different ends of gas-pipe fittings at the same time when connected by means of a wrist plate and slotted connexions, or their equivalents, for the purpose of bringing the taps to their work, and yet permit either of them to advance or recede without interfering with the others.

No. 15,620.—JOHN ROBERTSON.—*Improvement in Making Lead Pipe.*—Patented August 26, 1856.

The hydraulic ram B is pumped up, carrying the lead piston C with it high enough to allow the molten lead to be poured into the cylinder

D; the lead in the cylinder D having set, the core I is firmly held in the partially contracted lead. The piston C being set in motion moves freely over the core I, compressing the lead until the pipe begins to issue between the core and the parts *k*, the core I moving with the piston C until it comes to the bottom of the cylinder. When returning, the core I being held firmly in the die by means of the compressed lead until the piston C moves up a small distance, the guide *h* then presses against the head of the core and lifts it up with the piston to the proper position to receive the succeeding charge.

The inventor says: I do not claim as my invention any part of the cylinder, nor of the dies, nor of the arrangement thereof in the cylinder, nor of the manner of adapting these to the hydraulic press, nor the mode of operation generally; all of which have been substantially described in the specifications of the patents of Thomas Burr, heretofore referred to.

But I *claim* the construction and arrangement of the core I with the guide *h h*, in combination with the piston C, for the purpose set forth.

No. 14,071.—SHUBAEL WILDER.—*Improved Puddle-Ball Squeezer*.—Patented April 15, 1856.

This is an improvement on "Henry Burden's patent revolving forge hammer," patented December 10, 1840. The nature of the invention will be understood from the claim and the engravings.

Claim.—The employment of the circular flange A, constructed in sections, the same being connected by bevelled dove-tail joints, in the manner and for the purpose herein set forth.

No. 14,242.—SOLON S. JACKMAN.—*Improved Elevator for Puddlers' Balls*.—Patented February 12, 1856.

The chain 5 is connected to the rear end of lever *p*, and the chain 4 is connected with one end to the plate *s*, and with the other end to lever *p*. The object to be elevated is placed on plate *s* when depressed as in fig. 1, one end of lever *p* being then depressed by drawing the chain 5, and the other end raising the stem *r* perpendicularly, and with it the plate *s* and its load. When sufficiently elevated, the chain 4, on receiving its strain, tilts the plate *s*.

Claim.—The use of the pulley-lever *p* and brace *q*, in connexion with the stem or supporter *r* and tilt-plate *s*, constructed and operated substantially as described and for the purpose set forth.

No. 14,166.—RUFUS PORTER.—*Improved Punching Machine*.—Patented January 29, 1856.

The object of this arrangement is readily to accumulate a sufficient quantity of momentum power to punch holes with facility through cold metals. When the wheels have been in motion so as to acquire the

necessary momentum, the quadrants J are pressed rearward by the hand, when the tappet *s* will strike the cross-bar N and thereby depress the punch-rod I.

Claim.—The use of the double quadrant J J, in combination with the tappet S and the sliding-shaft I, when their several parts are arranged and operated, in connexion with the fly-wheel G, substantially in the manner herein set forth.

No. 14,866.—EDWARD HEATH.—*Improved Punching Machine.*—Patented May 13, 1856.

The cylinder J is turned till the proper punch is brought under the plunger-rod I, the lip *g* fitting in the recess *f* in the punch, and the pin *h* being forced by the spring N into one of the holes *i* to retain the cylinder in proper position.

Claim.—Placing a series of punches L of varying sizes and forms in a flanged rotating cylinder J, arranged relatively with the plunger-rod I, as shown, so that by rotating the cylinder either of the punches may be brought in line and connected with the plunger-rod I.

No. 14,357.—F. R. FORD.—*Improvement in Riffle Boxes.*—Patented March 4, 1856.

The water charged with gold-containing earth is forced underneath the dash-boards E, where it is brought in contact with the stratum of quicksilver at the bottom of the box, and is forced over the riffles C. The quicksilver being in one body is not liable to be broken into little globulæ and carried away with the water.

Claim.—The arrangement of the riffles E and C, in respect to the surface of quicksilver, as herein described.

No. 14,137.—EMMONS MANLEY.—*Improved Riveting Machine.*—Patented January 22, 1856.

The punch *e* is connected at its lower end with a spring *f*. By thrusting back hand-rod B the said spring is compressed by means of slide *j*, the slide being operated by rod F attached to lever A. The compression of the spring thrusts the punch *e* upward, and the latter, in consequence of its tapering shape, moves the anvil *d* back. The punch then protrudes through the hole *m* in the anvil far enough above its face for the purpose of piercing the laps of the sheets to be riveted. The sheets are then laid upon the punch, and receive a blow from the hammer D, piercing a hole for the rivet. The hand-rod being pulled forward, the punch is drawn below the face of the anvil; and the anvil, by means of spring *n*, is moved forward so as to furnish a foundation for the rivet direct over where the hole for punching was and directly under the rivet sink in the hammer. The shaft of the hammer D is provided with spiral grooves *p*; as often as the hammer flies back, the dent *r* enters

one of the spiral grooves in order to turn the hammer sufficiently and to bring alternately a punching hole *o* or a riveting hole *z* of the hammer-face over the work. The mandibles *q q*, which are worked by rods *y* connected to lever *A*, carry forward and place the rivets on the anvil under the hole punched in the sheets.

Claim.—What I claim as my invention, and desire to secure by letters patent, is the arrangement of the punch *e*, lever *A*, and mandible *q*, in relation to the anvil *d* and self-adjusting hammer-head *D*, in the manner and for the purposes set forth.

No. 14,897.—JAMES N. ASPINWALL, assignor to HENRY E. STAFF and JAMES N. ASPINWALL.—*Improvement in rolling File Blanks.*—Patented May 13, 1856.

The bar is placed between the proper groove *l*, the end of the bar being in contact with the stop *M*, which determines the proper length of the bar which is to be acted upon at once; a continuous motion being thus given to the rollers, the bar will be acted upon and forced outward between the rollers, the concentric grooves compressing a portion of the bar into proper shape on two sides; the two opposite sides are then inserted between grooves corresponding to it in thickness, and the bar will be then compressed in proper form in two directions; see fig. 2, in which a flat file blank is shown in dotted lines, *P* representing the grooves for a flat file blank, said grooves forming the face sides, and *l* the grooves for forming the two opposite sides.

Claim.—The use of the rollers *A B*, as described, for forming file blanks, when said rollers are operated and adjusted by the slide *k*, cam *I*, and springs *d*.

No. 14,552.—JOHN W. BROWN.—*Improvement in Rolling Railway Bars.*—Patented April 1, 1856.

The improvement has for its object the rolling of the bars into such forms successively as to cause all parts of the rail to be submitted in the rolling process to as nearly as possible an uniform degree of drawing and compression, thereby preventing the separation of the head and flange, and making all parts of the rail of equal density.

The numbers denote the order of succession in which the grooves of the rollers *A* and *B* receive the bar.

Claim.—So forming one or more of the grooves of the rollers, as shown at 3, fig. 1, as to produce a depression or cavity all along that side of the bar which is to form the base of the rail previously to the reduction of the bar to form the neck, said cavity to be filled up by the displacement of the iron from the middle of the rail, by the subsequent rolling operation, substantially as described.

No. 16,087.—RICHARD G. HOLMES and W. H. BUTLER.—*Improved Burglar-Proof Safe*.—Patented November 18, 1856.

The sides and door of this safe are composed of sheet iron *a*, to which the chilled cast iron is bolted; the latter material can only be reduced by grinding, and it would, therefore, require a great deal of labor to fit the door to the sides. This is avoided by fitting a loose piece *K* of wrought-iron into respective rebates of the door and sides, which in this manner can be joined perfectly tight.

Claim.—The loose fitting pieces *K*, applied substantially as described, to be received partly into a rebate into the door, and partly in a groove in the door frame, substantially as and for the purpose set forth.

No. 14,600.—JOHN J. CROOKE.—*Improved Sash Fastener*.—Patented April 8, 1856.

Fig. 1 represents the two parts *A* and *B* of the sash when the window is closed, and the lines *b*¹ represent the bolt *b* when locked; in bringing the knob *c*¹ to the position *c*, the bar *i*, actuated by the spring *l*, will catch under the projection *e* and secure the bolt in its position. When the window is raised, the plate *C* pushes the roller *o* back; and as soon as the sash rail gets past, the roller slides back again. Therefore, in shutting the window, the plate *C*¹ pushes back the roller, and drives the cross-bar *i* against its spring *l*, which relieves the projection *e*, causing the bolt to spring out and lock the window.

Claim.—Combining with the bolt of a self-acting window latch an engaging and disengaging catch, constructed and operated as described.

No. 15,523.—WILLIAM PATTON.—*Improved Sash Fastener*.—Patented August 12, 1856.

The bolt *A* is pivoted at *e* to the plate *B* in such a manner that the main body is hung outside the pivot *e*, and is arrested from swinging too far outside by the stud *c*. In the position as represented in the illustration, the sash cannot be raised, as the upper part of the bolt bears against the catch *r*. The bolt can be operated upon by means of the arm *i*; and when freed from the catch *r*, the sash can be raised and the hook *m* will fall into the next recess, and will be held there by means of catch *n*, which will hold the sash suspended.

Claim.—The described supporting and self-locking sash fastener, composed essentially of the plate *B*, bolt *A*, and catch *n*, when said bolt is arranged in an upright position, and hung forward of its fulcrum, so that its whole weight shall tend to throw it into the catches; the whole being constructed and operating together, and in the manner and for the purpose set forth.

No. 14,028.—JOSEPH MARSH.—*Improved Sash Lock*.—Patented January 1, 1856.

A weight lever A and sliding bolt B are enclosed between two plates D and C. The bolt and lever are connected as represented in fig. 2. When the bolt is ejected by turning the handle A¹, the weight of the sash bears on the edge *e* of said bolt, and the bent edge of the plate C will prevent the withdrawal of the weight until the weight is removed. But on gently raising the sash, the bolt drops down towards *e* and frees the notch *d*, allowing the bolt to be operated by the lever and handle A.

Claim.—Having thus fully described my invention, what I *claim* as my invention, and desire to secure by letters patent, is, the construction and arrangement of the plates C and D, the lever A, and bolt B; said bolt having the secondary locking notch at D, operating in the manner and for the purpose substantially as described.

No. 15,343.—LUCIUS PAGE.—*Improved Sash Lock*.—Patented July 15, 1856.

By taking hold of the stud I, and raising the weighted arm D turning on the fulcrum G, the pinion E on the same shaft will be caused to work the rack C of the bolt B, and will draw said bolt backward; by suffering the arm D to fall by means of the weight *e*, the bolt B will be impelled forward by the same arrangement.

Claim.—The combination and arrangement of the weighted arm D, the rack *c*, the sectoral gear or pinion E, the stopping arm F, and the stop shoulder H, as applied to the bolt and within the case thereof, and so as to operate together and actuate the bolt.

No. 15,857.—OWEN REDMOND.—*Improved Sash Lock*.—Patented October 7, 1856.

The weight of the slide S causes the inclined plane *d* to act on arm *e* of bolt B, and to project the tongue *f*; while the incline *i* securely fastens the said bolt, as shown in fig. 1. The raising of slide S causes arm *m* of said slide to lift arm *e* of the bolt and to draw the tongue *f* within the case.

Claim.—The swinging bolt B, in combination with the slide S and case O, constructed, arranged, and operating as described, so that the gravity of the slide shall shoot the bolt and maintain it in position.

No. 15,939.—WALTER WORTHEN.—*Improved Balance and Fastener for Window Sash*.—Patented October 21, 1856.

The outward pressure on the projection on the spring C against the side of the window frame keeps the sash B balanced in any desired elevation. When the lower sash is pressed entirely down, the spring

C will catch on to and hold the sash by the pin K in the window frame; and when it is desired to raise the window sash the finger should be placed against the under side of lever D, pressing it upward, so that it will both disconnect the spring or fastener from the pin K, and raise the window, as may be desired.

Claim.—Balancing and fastening window sash, both by one spring, constructed, arranged, and operated essentially in the manner and for the purposes set forth.

No. 15,700.—JAMES W. LYON.—*Improved Screw Cutter.*—Patented September 9, 1856.

The wire W being inserted in the orifice of the box H, so that the end of it rests against the face of the stock K, the cutter B is projected by means of the handle of lever C, and the blank is reduced to the size of the screw to be cut, when the chisel is arrested by gauge screw G coming in contact with stop g^2 . The shank of the screw is now forced into the die K, which cuts the thread upon it; and the finished screw comes in contact with screw P in clamp M, which then causes the die stock K to open and to drop the finished screw.

Claim.—The use of the slide rest, slide cutter tool, wire holder box, and spring clamp dies, or their equivalents, constructed and combined, for the purpose of cutting and finishing screws, as set forth.

No. 15,932.—JOHN MOORE.—*Improved Screw Machine.*—Patented October 21, 1856.

The dies K can be forced to the blank or released from it by operating the lever T, which on being lifted will strike the catch V on the top of bar P; by this movement the links N are turned on their fulcra and throw the dies K open, and set the bolt to be cut free.

The inventor says: I do not claim the peculiar shape of that part of the body which is semi-circular; that is not new. I do not claim the vibrating motion of the die-chuck; that is old. I do not claim the peculiar shape of the dies.

But I *claim* operating the cutters in the die-box by means of the links N, the internal and external plates, as described in connexion with the bar P, the arc 2, the lever T, and set bolts W, in the manner and for the purpose set forth.

No. 14,041.—CULLEN WHIPPLE, assignor to the NEW ENGLAND SCREW COMPANY OF PROVIDENCE.—*Improvement in Screw Machines.*—Patented January 1, 1856.

On one side of disc B a series of equidistant radial grooves *a* are formed to receive the screw blanks; a ratchet-wheel E is fixed on the same shaft, which carries the disc B, whose teeth are equidistant and correspond in number with the grooves *a*. The ratchet-wheel is actu-

ated at intervals by means of pawl F. The plate J is supported by a bracket K bolted to the frame; the side of the plate J next to the disc is smooth and at unequal distances from the face of the disc, so that it inclines towards the same. The approximation of the gripping plate J, gradually forces the screw blanks into their respective grooves, until the pressure is sufficient to hold them firmly during the operation of nicking, which is done by means of the circular saw M. The saw M is made to approach to and recede from the screw blanks during the process of nicking by being mounted upon a shaft N, which rotates in journal-boxes, in cylindrical blocks P which are eccentric to its axis. The blocks P rest in cavities in the standards Q, both united by a yoke R, which latter is vibrated by means of cams H, and thus impart to the saw a reciprocating motion during the process of cutting.

Claim.—The combination of a series of grooves in a moving surface with a smooth guard and gripping plate, operating substantially as described.

Also the nicking-saw, mounted on the oscillating eccentric bearings resting in cylindrical boxes, in combination with mechanism for presenting and holding the blank as herein described.

No. 15,052.—CULLEN WHIPPLE, assignor to the NEW ENGLAND SCREW COMPANY.—*Improvement in Making Screws.*—Patented June 3, 1856.

The arm H attached to the ratchet G is vibrated within the link i by means of rod J, treadle K, and cam L. At each advance movement of the ratchet hand G, one of the grooves *c* in the periphery of the frustrum is brought opposite the mouth of the inclined slot *a'*, receiving a screw blank, which will be prevented from falling out of the groove by means of a guard plate M, extending round the frustrum far enough to bring the blanks to the desired point of delivery.

Claim.—The combination of the feeding slot *a a'*, moving series of discharging grooves *c*, and guard-plate M; but I make no claim to either of those elements of the combination by itself.

No. 14,367.—EUGENE J. POST.—*Improvement in Scythe Rifles.*—Patented March 4, 1856.

The object of this improvement is to cause the rifle to retain the emery or sand with greater tenacity than those made in the ordinary way, and thus to make them more durable.

Claim.—Corrugating the surfaces *a* of scythe rifles substantially in the manner and for the purposes herein set forth.

No. 16,290.—LEVI SKEELS.—*Improvement in Tinnors' Shears.*—Patented December 23, 1856.

In getting out straight work, the hinged bench *e f g* is let down to a horizontal position, and the tin is clamped between bar *f* and set screw

g, and trimmed by means of shears *c d*. For getting out round work, the treadle *h* is connected with carriage *j k* by means of arms and levers *s t u v* in such a way that the advance of the clamping disks *n o* keeps exact pace with the point of intersection of the shears *c d*; so that the outer edge of the tin being held fast by the shears, the clamp *n o*, in the act of travelling forward, causes the piece of tin to rotate like a wheel, resulting in the separation of a perfect circle.

The inventor says: I do not confine myself to the precise arrangement described, but propose to make such modifications as experience may suggest.

I *claim*, 1st. The rotary and sliding clamp *n o p q r*, in the described combination, with the straight shears *c d*, for the cutting of circular forms as explained.

2d. The arrangement and combination of the hinged bench *e f g 2 4* with the fixed bench or frame *b b'* and with the shears *c d*, for the purposes set forth.

No. 16,038.—DAVID M. LAWRENCE.—*Improved Shutter-Fastener*.—Patented November 4, 1856.

The lock plate *D* is pivoted between the inner half of the lower hinge of a shutter *B* and the side of the window frame *A* by means of the hinge screw *f*. The semi-circular flange of the lock plate *D* is provided with notches, which embrace the upper edge of the hinge, and thus hold the shutter in any desired position, the spring stop *E* pressing from below against the thumb piece. By pressing down the thumb piece the lock plate can be disengaged from the hinge.

Claim.—A lock plate *D*, when constructed with a semi-circular flange, having a series of notches cut therein, in combination with the spring stop *E* and hinge *C*, the whole being arranged substantially as and for the purposes described.

No. 15,064.—HIRAM COLLINS.—*Improved Shutter Operator*.—Patented June 10, 1856.

By turning the rod *C* at the inner side of the stile, the lower bent portion *e* of the rod will actuate the shutter and cause it to open or close according to the direction in which the rod is turned.

Claim.—Opening and closing the blind or shutter *B* by means of the inclined or oblique rod *C*, which passes through the stile of the casing, and has its lower or outer end bent and fitted within a socket *b* attached to the lower part of the shutter or blind, the rod and blind being secured at desired points by means of pin *g* in the knob *D*.

No. 15,287.—CHARLES R. EDWARDS.—*Improved Shutter Operator*.—Patented July 8, 1856.

Fig. 1 represents the shape of the hinge fastened as a corner butt to the window-casing by means of screws *A A*. The cog-wheel and butt

i (fig. 3) are cast in one piece to be fastened to the blind. The socket *k* (fig. 3) is to be slipped on the gudgeon *l* (fig. 1). The shaft in fig. 3 from *m* to *H* is passed through a hole in the casing, and the gudgeon *g* of said shaft entered in the socket *d*. By inserting the forked end *p* of the key *S* (fig. 4) into the forked end *m*, the latter shaft, together with screw *F*, can be turned, and the screw *F* meshing into the cog-wheel will turn the latter and the blind. The end *E* of the piece represented in fig. 5 is entered through the square hole in fig. 1, so that its cavity *B* will form one side of the cavity *B B*, (fig. 1,) and that the edges *n* meet, and *c c* will form a half socket to support the shaft *H*. The piece *E* will be held to its place by a catch *o*. The projection on the outer cylindrical edge of the cog-wheel shown at *E*, (fig. 3,) is for the purpose of conducting the water, and in combination with the piece (fig. 5) to protect both screw and cogs from ice. The manner of operating the lattice, by this same arrangement, can be understood by reference to the claim.

Claim.—1st. The portable male crank fig. 4, as constructed and operated with the screw shaft, with the combination and for the purposes described.

2d. The piece fig. 5, and the thin projection as shown at *E E* fig. 3 on the outer cylindrical edge of the cog-wheel, as and for the purpose described.

3d. Operating the screw in the combination described by use of the knob crank fig. 4 for the purpose of operating the lever *b c* fig. 2, while the lever is in contact at *c* with the head of a screw (or its substitute) in the casing at *a* fig. 2, for the purpose of operating the lattice as described.

No. 15,416.—JAMES R. CREIGHTON.—*Improved Shutter Operator.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The attachment of the serrated tumbler catch *T* to the slide *Q*, said catch meshing or interlocking with a similarly serrated or toothed surface opposed *R*, on the side of the slide-box or frame *E*, in combination with the square extension rod *U* and guides *S S'*; by which the operator is enabled to operate the outside blinds or shutters of a house from the inside of the same, and to secure said blinds or shutters in any required position without the liability of their dislodgment from the outside, unless by the exercise of unusual violence.

No. 15,094.—PHILIP WARNER.—*Improved Bolt for Shutters.*—Patented June 10, 1856.

The nature of this invention consists in the construction of a window-shutter bolt mortised into the shutter, and presenting a finished plate in front.

The inventor says. I do not claim a bolt as attached to a plate by

clips, with a flanged plate catch; but I *claim* two corresponding silver-plated metal flanged plates B, in combination with a silver-plated knob D attached to an inside bolt E, having on the reverse, or inside of the plates, corresponding clips G, in which the bolt operates: said bolt and clips to be fitted to a mortise in a window-shutter, for the purpose of presenting a neat silver plate on each shutter to hide the bolt, and completely protect it from the weather.

No. 14,912.—JOHN GUNNER, jr.—*Improved Swing Bolt for Fastening Shutters*.—Patented May 20, 1856.

The hub C is fastened to the inside of the window frame. The hub has a slot at top (fig. 2). When the shutter is thrown open the lever drops into this slot D, and holds it back against the wall outside. In that case the pin H sits in the first hole, and the end of the lever is in the slot E. If the shutter is to be but partially open, the pin H is dropped into one of the other holes F.

Claim.—The use of the bolt lever A and hub c, in connexion with the catch-plate B, when the same is cast with a channel E.

No. 14,563.—ALBERT V. HILL.—*Improvement in Slide Rests*.—Patented April 1, 1856.

The nature of this invention consists of a rest E, with a mortise at each end, through which a slide-bar K passes, which bar is driven by means of a screw C. The chisel-rest X and chisel pass through the slide-bar K. The chisel is fed by means of the screw H.

Claim.—The use of the slide-mortise K and driving-screw C, arranged and operating in connexion, as described.

No. 14,176.—DANIEL DOD, assignor to Himself and HENRY F. READ.—*Improved Soldering Iron*.—Patented January 29, 1856.

The soldering bit *a* is constructed hollow, so that a movable core *b* can be heated and inserted into it, thereby avoiding the necessity of heating the bit by direct contact with the fire.

The inventor says: I do not claim the iron handle or copper bit, nor any particular external form of soldering irons, nor the general application of heated centres, as used in embossing irons or rollers, crimping irons, curling tongs, and hatters' irons, as they have been known and used previous to my invention.

But I *claim* the combination of a hollow bit of copper with movable centres of iron, in the construction of soldering irons, as described in the foregoing specification.

No. 14,573.—ASAHEL PIERPONT.—*Improvement in Soldering Wire Ferrules*.—Patented April 1, 1856.

Fig. 1 represents one of the jaws *a*; they are attached to the frame of the machine by screws passing through slots. The parts *c c* of the

jaws are pressed against the conical end of rod A, by means of the springs *b b*. (One of the jaws is removed in the figure, to show the cone.) The rod A receives a longitudinal motion from the knuckle joint B, by means of lever C, in order to expand the jaws *c c c c*, and to bring the ferrule into exact form. The wire is held steady by the four-pronged fork D together with the rod E and spring *e*.

Claim.—The employment of the jaws *c c c c* with the cone *d* and fork D, or their equivalents, when the whole is constructed, combined, and made to produce the result as herein described.

No. 15,928.—C. A. McPHETRIDGE.—*Improved Spike Machine.*—Patented October 21, 1856.

The iron rod is fed to the machine by means of the feed-rollers P, whence it passes in between the dies M and *m*¹, which point and cut the blank, whence it is fed to the conducting arms C, which revolve around the shaft 3; as the blank comes in contact with the projection H, its upper end is bent, and arriving under the heading-tool N the head is formed as the lever B is caused to oscillate on its fulcrum 6, by a crank operating pitman X. When this operation is performed the conducting arms are turned one eighth of a revolution as the action of the pin 4 on pinion D¹ raises the spring lever in slot 5, and thus the same operation as described is repeated.

Claim.—The conducting arms C C as constructed, when operating in connexion with the means employed for cutting, pointing, heading, and clearing, and the closing guide E F, as described.

Also the use of the feed-rollers P P, the ratchet-wheel V, bar C, pinion K, pawl O, in connexion with the wheels D D, and the pin 4, when constructed and operated in the manner and for the purpose set forth.

No. 15,468.—MOODY BELKNAP.—*Improvement in Spike Machines.*—Patented August 5, 1856.

The cutting apparatus of this machine is composed of a stationary head block C, provided with a vertical cutting edge *e*, in conjunction with which a movable cutter D is operated. The knife D, as it advances towards the stationary knife *e*, makes a cut in a slanting direction through the spike-rod. The movable knife D, represented at fig. 2, is provided with a recess *f* arranged in advance of the cutting edge, the vertical height of which recess should be made equal to the vertical depth of the spike rod, so that when the knife is severing a blank from the rod the spike rod shall be embraced both on its upper and lower sides at its end where the cut is made, so as to prevent the said end from which the blank is taken from being upset or formed with projecting fins.

Claim.—The improvement of making the movable knife D with a rectangular recess *f*, for the purpose and to operate substantially in manner explained.

No. 14,088.—ELISHA H. COLLIER.—*Improvement in Heading Spikes.*—Patented January 15, 1856.

After the pointed blanks are fed into one set of die-holes and headed, the die-plate *a* is reversed and the other set of die-holes filled with blanks which are headed in a similar manner; the blanks first headed in the mean time dropping out of the die-holes by their own weight as fast as they shrink sufficiently by cooling.

Claim.—Hanging the die-plate or anvil *a* upon centres or bearings in such a manner that it can be reversed or its under face brought uppermost; the said die-plate or anvil being provided with a double set of die-holes, as described and for the purpose specified.

No. 14,566.—VINCENT D. LENT.—*Improved Former for Spiral Springs.*—Patented April 1, 1856.

The improvement in the former *C* consists in the two inclined planes *P* and *P*¹, which contain a continuance of the groove of the former.

The contact of the spring while compressed is, by this improvement of the former, avoided.

The inventor says: I am aware that springs might be made on conic frustra of such an angle that the parts of the spring wound at right angles to the axis of such a former would not coincide so nearly with other parts of the spring that contact between them would follow compression. Springs made upon such a former, however, would have an unnecessary amount of material, and I do not claim a former so constructed; but I *claim* a former constructed with suddenly expanded ends, for the sole purpose as herein set forth.

No. 16,214.—JOHN NEVILL, mediate assignor to the DAMASCUS STEEL MANUFACTURING COMPANY.—*Improvement in Making Cast-Steel.*—Patented December 9, 1856.

Fifty pounds of malleable iron cut into small pieces, together with ten ounces of powdered charcoal half an ounce of ferro-cyanide of potassium, one ounce of sal ammoniac, and six ounces of common table salt, with one ounce of brick dust, are melted in a suitable pot, and the heat maintained for three hours, when the contents are poured off into iron moulds in the ordinary manner of pouring cast steel.

Claim.—The described process for converting wrought iron into cast steel, consisting essentially in the use of the various compounds of cyanogen and sal ammoniac, either separately or in combination with each other, or with other ingredients, when mixed and fused with the wrought iron which is to be thus converted.

No. 14,976.—FRANZ UCHATIUS.—*Improvement in Making Steel.*—Patented May 27, 1856. Austria, March 14, 1855.

Claim.—The conversion of pig iron into steel by subjecting the same, when reduced to a granulated state, to the combined action of oxidizing

agents and the requisite fluxes, whereby I am enabled to manufacture cast-steel of a determinate quality, and obtain it at one melting.

No. 14,435.—HOMER ANDERSON.—*Improvement in Welding Steel*.—Patented March 18, 1856.

The compound consists of equal parts of sulphate of soda and carbonate of soda.

Claim.—The compound of sulphate of soda and carbonate of soda, made up and used for welding metal surfaces, as herein set forth.

No. 16,151.—HARLEY STONE and MASON D. COLE.—*Improvement in Expanding Tap*.—Patented December 2, 1856.

On turning the rod G one way, it moves the nut I, the ends of which following the spiral grooves turn it, and thus turn the cam piece J, and the cam surfaces force out the cutters S. When the rod G is turned the other way, the nut takes the reverse direction, carrying the cam piece, whose collars draw in the cutters by their lips; whilst to use the whole, the force is applied to A by its square part, which operates the cutters without expanding them.

The inventors say: We do not claim making expanding tools, by means of cam surfaces, irrespective of form and arrangement.

But we *claim* the arrangement of the cam piece J, the nut I, and screw G, and their connexion with the cutters and case A, when constructed and operating as set forth.

No. 15,195.—CHARLES R. SOULE.—*Improved Machine for Making Rake Teeth*.—Patented June 24, 1856.

The wires of which the teeth are formed are cut of the proper length and are placed one at a time upon the grooved plate *g* and step *i*. The lever I is then depressed by the attendant, the pulley D is rotated, and the pin *p* will strike against the catch *n*, and the arm G and shaft C will be rotated with the pulley D. The projection *a*, at the end of shaft C, will bend the wire and cause it to coil around the end of said shaft, and the upper part of the frame E will be gradually moved out from the frame A in consequence of the wire being wound around the shaft. As the upper part of frame E moves outward, the rod *l* will be shoved outward beyond the platform B; and when these coils of the wire have been formed on the shaft C, the rod *l* will be sufficiently beyond the edge of the bed for the longer arm *u* of lever H to catch against it; the pin *p* will, consequently, slip past the catch *n*, and the pulley will rotate while the shaft C remains stationary. When this takes place, the elasticity of the rake-tooth, caused by the coil of the wire upon the shaft C, will throw up the arm G, and the arm *u* will catch upon the upper end of the spring *t*; the wire or rake-tooth is then removed from C.

Claim.—The shaft C, with loose pulley D and G and projection *a* attached, and used in connexion with the frame E and lever F, with rod *b* attached, and the lever I connected with arm *s*, having the spring *t* attached; the arm G having the lever H secured to its end.

No. 16,213.—JOSEPH NASON.—*Improvement in Connecting Tubes.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: Several modes of joining the ends of straight parallel tubes to their cross connexions have been hitherto employed, and are well known. In some cases the ends have all been threaded and screwed into the cross. They have also been joined with ordinary socket joints, and made tight with cement or with flanges and bolts, and sometimes the cross tubes have been cast upon them.

I do not claim these modes, none of them being applicable to the objects contemplated in my invention. I *claim* the mode, specifically described, of joining the straight parallel tubes *a a* and *b b* to the cross tubes A and B by means of screws and plain cylindrical joints upon the tubes *a a* and screws upon both ends of the tubes *b b*, whereby the tubes *b b* are made to hold the cross tubes A and B firmly in position, and the cylindrical ends of the tubes *a a* are left free to adjust themselves in their openings during the process of entering and screwing up the tubes *b b*, and afterwards when expanding unequally.

No. 14,603.—ORLANDO V. FLOREY.—*Improved Vise.*—Patented April 8, 1856.

The nature of this invention consists in the employment of a brace G extending from the lower end of the movable jaw C to a ratch H, arranged in such a manner that the weight of the brace will disengage it from the ratch when the jaws are not tightened against any article.

Claim.—The use of the ratchet brace G operating in connecting with the ratch H sliding beam D, and movable jaw C, substantially in the manner herein set forth.

No. 14,795.—CHARLES BUSS.—*Improved Vise.*—Patented May 6, 1856.

The nature of this invention will be understood from the claims and the engraving.

Claim.—Making the movable jaws A A, with the parts B B, extending beyond the joints, so as to be operated by the wedge G, or its equivalent.

2d. I claim making both jaws movable, so as to open equally and hold the various sizes on a line with the centre of the whole tool.

No. 15,051.—SAMUEL FAHRNEY, assignor to ABRAHAM HUFFER and BENJAMIN FAHRNEY.—*Improved Vise*.—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use of the sectors D D, in combination with the studs G, for the purpose of rendering the jaws of the vise parallel to each other.

No. 15,170.—HORACE B. CHAFFEE.—*Improved Vise*.—Patented June 24, 1856.

This improvement obviates the necessity of adjusting the stop by hand, as the stop is self-acting, the supplementary jaw E throwing the pawl F into the rack D at the proper time, and the weight G throwing the pawl from the rack when the jaw E is relieved from pressure.

Claim.—The supplementary jaw E pivoted to the stationary jaw A of the vice, and connected with the weighted pawl F, substantially as shown, for the purpose set forth.

No. 15,277.—HIRAM C. BROWN.—*Improved Vise*.—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claims and illustration.

Claim.—1. The rod M, arranged and operated so that by pushing it endwise both ends will be simultaneously raised, and thereby lift the pawl *a* from any part of the ratch.

2. Adjusting and retaining the jaws parallel with each other, or to any desired angle, either by varying the length of the brace-rod at *e* between its points of contact at the top and on the movable jaw, or by varying the position of the lower point of contact at *m*, substantially in the manner described.

3. The use of the adjustable sliding-rod H, arranged and operating in connexion with the brace-rod I, substantially in the manner and for the purposes herein set forth.

No. 15,583.—R. W. THICKINS.—*Improved Vise*.—Patented August 19, 1856.

By turning the collar H so that its major diameter will be in line with the major diameter of the cap F and recess *e'*, as represented in fig. 2, the springs *f* will force apart the two parts of the nut G, and the screw C will be freed from the nut, and the screw C and jaw B may be moved back and forth bodily; but when the collar H is turned so that its major diameter crosses the major diameters of the cap F and recess *e*, the two parts of the nut G will be forced together, and will grasp the screw C, as represented in fig. 3.

The inventor says: I do not claim the cross levers or bars E E separately, for they have been previously used; but I *claim* the combination of the levers or bars E E and slotted arm D arranged and applied to the jaws A B, as shown, for the purpose specified.

No. 15,862.—CALEB C. WALWORTH.—*Improved Vise*.—Patented October 7, 1856.

The jaws D of the two vises can be operated independently by means of the right-and-left screw E, operated by a lever F, and the vise can be turned around its centre shaft by means of lever G, and can be secured in a fixed position by inserting said lever into one of the notches H.

Claim.—The arrangement of two vises so as to revolve about a common centre, and locking the same in any desired position by means of the lever G and notches, or any other suitable device, substantially in the manner and for the purpose set forth.

No. 14,192.—SAMUEL GISSINGER.—*Improved Bench Vise*.—Patented February 5, 1856.

The links M N and arm L hold the wedge H up between the limbs A B and slide F, and the projection G and the butt of the wedge are kept face to face by the superior weight of the descending projection K; and the projection G being in the same vertical plane as to its face with the face of the fixed jaw C, the parallelism and practical operation of the wedge is thereby secured, and thereby the parallelism of the vise preserved during all motions of screw E.

Claim.—The projection G and the projections I and K, arranged as described and for the purposes set forth.

No. 14,550.—BENJAMIN G. BALL.—*Improved Bench Vise*.—Patented April 1, 1856.

A is the stationary jaw and B the movable jaw. The rotary shaft C is kept from moving otherwise in relation to jaw B, then turning by the pin *d* and groove *b*. The tubular connexion block F has a helical screw *f* on its periphery, which receives a projection *g* from the side of the chamber E. In order to fasten an article between the jaws, the shaft C is turned a little so as not only to clutch to the screw connexion block by means of the rack K and stud L, but to rotate said shank a little. By the rotary movement of the block and by the action of its stationary screw-thread projection, the movable jaw will be drawn closer up to the article placed between its two jaws.

Claim.—Combining with the rotary shaft C, and the shanks of the jaws A and B, the tubular screw connexion, and the clutch as described, when a rotary shaft is made to actuate the jaws, the whole being constructed and made to operate substantially in manner and for the purpose as above set forth.

No. 14,366.—JOHN T. OGDEN.—*Improvement in Handle for Vise*.—Patented March 4, 1856.

The nature of this improvement will be understood by reference to the engravings.

Claim.—Uniting the vise handle H with the head I of the screw D, by means of the service joint *f g*, operating in the manner substantially as herein set forth.

No. 15,705.—F. NOETTE.—*Improvement in Cutting and Drawing Wire.*—Patented September 9, 1856.

Motion being given to the shaft C, the two cutters H and L will be rotated by gearing, and said cutters will cut a strip off from the plate M, the roller *h* being so adjusted that the strip may be of the required width, and the edge of the plate being kept against the roller *h* by weighted lever V, pawl and ratchet G U, racks O O, and shaft Q with pinions *e* upon it, which pinions gear into said racks, the strip being cut spirally from the periphery to the centre of said plate M. The wire is wound upon drum I¹, to which a vertical vibratory movement is imparted by means of the right and left screw rods *l l*, with pinions *m* attached and made to gear alternately into pinion *k* on the shaft A¹ by means of the block B¹, lever D¹, bar G¹, and weighted lever H¹. The wire is removed from the drum I¹ by raising the upper disc *r*, allowing the staves *t* to incline inward.

Claim.—1st. Feeding the circular plate M to the circular cutters H L, and gauging the same by means of racks *o o*, shaft Q, with pinions attached, the pawl and ratchet G U, weighted lever V, or equivalents, and gauge roller arranged as shown and described.

2d. Operating the reel or drum I¹ or giving it a vertical vibratory movement by means of the right and left screw rods *l l*, with pinions *m m* attached, and made to gear alternately into the pinion K on the shaft A¹, by means of the block B¹, lever D¹, bar G¹, and weighted lever H¹, arranged as shown and described.

3d. The reel or drum I, when constructed as shown, so that it may be compressed or contracted to allow of the ready removal of the wire from its periphery.

No. 14,751.—THOMAS D. BURK, assignor to JAMES GARRETT.—*Improved Device to allow for Contraction and Expansion in Wire Fences.*—Patented April 22, 1856.

This arrangement allows the wire to yield to pressure from cattle or any other object.

Claim.—The application of the key C, the lever D, the weight E, and the stay G to a wire fence.

No. 16,252.—THADDEUS F. ST. JOHN.—*Improved Machine for Wiring Blind-Rods.*—Patented December 16, 1856.

The operation of this machine is as follows: Motion being given to the shaft G¹, a reciprocating motion is imparted to bar G, and cross-head *o*. The wire E is drawn along a certain distance at each forward move-

ment of the bar *G* by the dog *d*, the wire being clamped between dog *d* and arm *e*. As soon as the wire is fed through the guide plate *O* the length of the stroke of dog *d*, the lever *A*¹ is actuated by the friction roller *b*¹ and frees the spring-catch *L* from the pin *n* and allows the spring *K* to throw the cutter *k* against the wire and knife 2, and a piece of wire is cut of the requisite length to form a staple. This piece of wire when cut off is directly over the hook *s* at the lower end of lever *q*; and as soon as it is cut off, the hook and bars *p* rise and the hook draws the piece of wire upwards between the curved ends of bars 1 and the wire is bent in the form of a staple, one leg being longer than the other. When the hook *s* reaches the ends of the bars 1, the projection *g*¹ throws the hook and staple within a recess in the lower ends of the bars, and the hook is retained therein by the spring catch *v*. The bars *p* then descend and force the staple into the rod *W*, the long leg of the staple passing entirely through the rod. As the bars *p* ascend to form the staple, the dog *d* moves backwards, and the arm or lever *J* is thrown outward in consequence of the friction roller *m* on the projection *l*, and is caught by the spring catch *L*.

Claim.—1st. The device formed of the reciprocating bars *p p* provided with the lever *q* having hook *s* at its lower end, the bars 1 1 attached to the uprights *M M*, the lever *q* being operated substantially as shown; by which device the staples are properly formed, and, when formed, driven or forced into the rods or slots.

2d. The combination of the reciprocating bars *p p*, lever *q*, and arm or lever *J*, with cutter *K* attached, the reciprocating bar *G*, with dog *d* and arm *e* attached, and the cam *S*, the whole being arranged and operating conjointly, as described, for the purpose specified.

No. 14,249.—ELISHA P. NEWTON.—*Improved Wrench*.—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I wish to be understood as not claiming the toothed shank; but I *claim* the arrangement of a semi-screw thread *C* cut or counter sunk in the shank and the semi-screw threaded stop or catch *E* for working them, by which means finer threads may be used, and the movable jaw be brought close up to the nut, and the stop or catch removed out of the way of the action of the wrench, they being arranged and operating in the manner as herein described and shown.

No. 14,221.—WILLIAM BAXTER.—*Improved Wrench*.—Patented February 12, 1856.

The two plates *A A* of the wrench slide upon each other whenever the screw *d* is operated so as to open or close the large and the small jaws simultaneously.

Claim.—Adjusting and securing the jaws *c c* of a diagonal wrench by means of the screw *d* and joints *f g*, as described.

No. 14,243 —FERDINAND KEEHNOLD.—*Improved Wrench*.—Patented February 12, 1856.

The cross-bar C forms the gauge for the jaw D, which latter is fitted on to C, and is to be moved through eccentric E.

Claim.—The jaw D and lever H, as constructed, operating in connexion with the ratchet-bar C, in the manner set forth.

No. 14,424.—ERASTUS TRACY.—*Improved Wrench*.—Patented March 11, 1856.

n is a spiral spring. The nature and operation of this improvement will be understood without further description.

The inventor says: I am aware an auxiliary jaw or griper, applied to or inserted within either the movable or stationary jaw of a screw-wrench, has been used. This I do not claim, being too expensive in construction and inefficient in its operation to come into general use.

I *claim* making the movable jaw in two sections, pivoted together; one of which sections embraces the shank and the other forms the clutch, by which the whole jaw is held to the shank, and both sections made, united, and operating in the manner and for the purpose set forth.

No. 14,779.—BRADFORD ROWE.—*Improved Wrench*.—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The solid movable jaw D¹ sliding between the parallel side pieces B and C to which the fixed end jaw A is attached.

I claim the bevel-wheel *p* and screw-gearing E to move the jaw D, in combination with the solid movable jaw D¹.

No. 15,482.—LORENZO D. GILMAN.—*Improved Wrench*.—Patented August 5, 1856.

The two jaws E pass through a slot C in the circular toothed plate A, revolving in a ring 4 which is attached to the handle G; the jaws are adjustable by means of the nut 9 on screw 8, which latter is provided with a right-and-left-hand screw-thread, and thus the jaws are made to slide in the slot in opposite directions. The pawl H on handle G is held in any desired position by means of finger I and spring *f*; and by inserting one of the forks between the teeth of the plate A, said plate is fixed to the handle and prevented from turning.

The inventor says: I do not claim inserting a forked piece of metal, with a square shank upon one end, in the square slot of the axis of the wrench and supported by a nut; neither do I claim the teeth on the axis; neither do I claim the pad: those having been used prior to my having any knowledge of wrenches.

I *claim* the use of adjustable jaws E E, as described, moving in the slot C C, and operated in connexion with the groove in the jaws, forming an adjustable socket, in the manner set forth.

No. 15,184.—GUSTAVUS A. JENKS.—*Improved Wrench for Gas-pipe, &c.*—Patented June 24, 1856.

The inventor says: I do not claim the pipe tongs with a curved movable jaw affixed by a pin to a handle having a stationary jaw and not provided with a screw adjustment; and furthermore, I do not claim the combination as patented by Bartholomew and Merrick, and of which my invention is an improvement.

But I *claim* arranging the hook or claw G and the spring E, with respect to the slide C and the main bar A, and hinging or jointing the claw directly to the slide C.

No. 14,546.—HALSEY D. WALCOTT, assignor to himself and MILTON E. WALCOTT.—*Improvement in Wrenches.*—Patented March 25, 1856.

E is a cylindrical chamber, to which is fitted the core F; C is a slot through the wrench, the back side *i* of which is inclined. *d* is a pin which is pressed against *i* and F by the spring *f*; *g* is a hole to receive the nut. When the handle is moved in the direction of the arrow, the core remains stationary; and when the handle is moved in a contrary direction, the pin *d* is pressed between the core and the side *c*, and the core is forced to move with the handle.

Claim.—The core F, pin *d*, spring *f*, and inclined-bearing *i*, operating in connexion with the handle C, as herein set forth.

No. 14,528.—WILLIAM WARWICK.—*Improvement in Wrenches.*—Patented March 25, 1856.

The spring *b* of the pawl D is inserted into a cut at the upper end of the pawl and there secured by a pin C. The teeth *f f* of the pawl take into the teeth *d d*, while the spring *b* bears against the smooth side *e e*.

I do not claim the rack, nor do I claim the applying of the spring pawl, as those devices have been used before, and are well known.

But I *claim* providing the shank A with a recess, whose one side *d d* is toothed, and the other *e e* is smooth, in combination with a pawl D placed in said recess on the inside of the sliding jaw C, in the manner substantially as described.

No. 14,571.—PHILIP McMANUS.—*Improvement in Wrenches.*—Patented April 1, 1856.

The spring G keeps the rack F free from the rack *a*; but, by turning the cam or eccentric H, the spring G and rack F will be forced inward the rack F catching into the rack *a*, and thereby securing the jaw D

The inventor says: I do not claim separately a cam or eccentric for holding or securing the sliding jaw at desired points.

But I *claim*, 1st, the cam or eccentric H attached to the sleeve E, and the rack F attached to the sleeve by a spring G, in combination with the rack *a* on the shank B; the above parts being arranged as shown and described, for the purpose specified.

2d. In combination with the cam or eccentric H and racks F *a*, the finger piece A¹, as described.

No. 16,158.—ORIN O. WITHERELL.—*Improvement in Wrenches*.—Patented December 2, 1856.

By forcing the handle A to the left, the eccentric end of the handle will be caused to bite upon the movable jaw at *b*, and thereby firmly to confine said jaw in the slot. By turning the handle to the right the jaw E is released, and can be adjusted at pleasure.

Claim.—Attaching the fixed jaw B of the wrench to a handle, which has its extremity made eccentric by a fulcrum pin D, and arranging the movable jaw relatively to said end of the handle and to the fixed jaw, substantially as and for the purpose set forth.

III.—FIBROUS AND TEXTILE.

No. 14,322.—JAMES S. McCURDY.—*Improvement in Binding Guides*.—Patented February 26, 1856.

The apparatus is secured to a sewing machine by screw *h*; one end of the binding E is then placed between the jaws of the receiving guide D, and is then drawn forward through the lips *b b*, one edge of the binding being held by the upper and the other edge by the lower lip, while its back edge rests against the spring *d*. The eccentric C is then turned so as to bring its edge in contact with the back edge of the binding without crowding it forward too far. The edge of the material to be bound is now placed between the lips *b b*, and crowded back against spring *d* and eccentric C; the needle then passes down immediately in front of and close to the ends of the lips *b b*, from which the binding is discharged, &c.

Claim.—The centre piece in combination with the plates A and B, arranged and operating substantially as set forth; for the purpose of adjusting the binder for the use of binding of different widths, and applying the same with unequal lap to the material bound.

No. 15,836.—JAMES WALLACE.—*Improved use of the Dash-Wheel for Washing and Bleaching*.—Patented September 30, 1856 —England June 26, 1855.

The articles to be washed are passed through the openings K which can be closed by lids L, and are placed into the compartments B of the

dash-wheel, and as the wheel is rotated on the hollow shaft D, steam enters through said shaft and passes through the perforations of said shaft into the square box I, and thence through a series of other perforations into the compartments B. The hollow shaft D also communicates with a retort for the admission of chemical ingredients into the dash-wheel, and thus the articles to be washed are operated upon by the combined action of steam and chemical ingredients.

The inventor says: I disclaim having invented the principle of bleaching or washing by the combination of mechanical agitation simultaneously with chemical action.

But I *claim* the use of the dash-wheel, substantially as described, in connexion with the use of the chemical ingredients and steam, for the purpose of bleaching, washing, or cleansing textile fabrics and other materials, as described.

No. 15,872.—OTIS AVERY.—*Improvement in Guides for Working Button-Holes*.—Patented October 14, 1856.

The nature of this invention consists in attaching to a clasp *a*, which embraces the cloth in which the button-hole is to be made, an instrument for catching the thread and twisting the loop of the same, so as to make the button-hole stitch, said instrument consisting of a tube *b*, in which the tweezers *c* are caused to revolve by having a pin on the outside, sliding in a spiral groove of the tube *b*; the tweezers move transversely to the movement of the sliding plate, and are capable of being slid or extended out over the edge of the clasp to catch the thread, and on drawing them back their rotary motion gives the thread the proper loop to make the button-hole stitch.

The inventor says: I do not confine myself to the use of the spiral groove in the tube to give a rotary motion to the tweezers, as that motion may be given by making a twist or screw to the tweezers, or they may be revolved by the thumb while in the act of moving the tweezers back and forth to catch the thread.

I *claim* the combination of the sliding plate with the revolving tweezers, operating and arranged substantially in the manner and for the purpose set forth.

No. 16,319.—JOHN WORSLEY.—*Improvement in Manufacturing Callender Rolls*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I disclaim the manner or form of making the rollers, for that has long been in practice by manufacturers of other rolls.

I *claim* the use and employment of the husks of maize (Indian corn) for making rolls, instead of cotton, wood, paper, or any other substance now in use.

No. 15,781.—A. D. SHATTUCK.—*Improvement in Carding Engines.*—
Patented September 23, 1856.

The cylinders B and C cannot revolve with a velocity less than that due to the motion of the band D; either of them may, however, revolve with a greater velocity. If the band H passes around the large end of the cone G and the smaller end of the cone F, the cylinder C will then turn with its minimum velocity, being driven by band D, and the cylinder B will be driven at a more rapid rate by the band H. The cylinder B now takes the cotton off from the main cylinder A, and at the same time strips the working cylinder O. The cotton taken off by cylinder B is carded on to the cylinder C, which now acts as a doffer to B; and as C runs slower than A, it is stripped by the latter, and thus A O and C are stripped. As the band H is traversed towards the machine, the cylinder B by a similar combination of motion is stripped by A, though it continues to strip the worker O. The main cylinder is now stripped by the cylinder C, which is doffed by the cylinder P, which, in its turn, is stripped by the main cylinder.

Claim.—The application to the main cylinder of carding-engines of two or more variable cylinders, in combination with a doffer, operating in the manner and for the purpose substantially as set forth.

No. 15,784.—A. D. SHATTUCK.—*Improvement in Carding Engines.*—
Patented September 23, 1856.

This invention consists in the use of a stripper or clearer B to the main cylinder A, in connexion with the doffer C, which is itself, in turn, stripped by the main cylinder; by which means the cotton is all taken off the latter and is immediately returned thereto—the operation being continuous, and neither requiring the card to be stopped, nor causing any break or interruption in the lap.

Claim.—The stripper B, in combination with the doffer C, and with the main cylinder of a carding-engine, operating in the manner substantially as set forth.

No. 16,196.—WILLIAM H. WALTON.—*Improvement in Cleaning the Top Flats of Carding Machines*—Patented December 9, 1856.

When the arms K sweep forward, the brush l, which is in rapid revolution, brushes over and cleans the side of the workers h that is uppermost, the brush being in turn cleaned by the revolving card cylinder m, whence the fibres are conveyed to the cylinder e and are reconveyed to the cylinder f. As the arms k move forward, a projecting piece k¹ strikes the workers h and raises them from their bed; and the piece k¹ on one side being cogged, takes into the pinions on their journals, and causes each to make a semi-revolution, thus bringing the working surface up to be cleaned by the action of the brush l which succeeds.

Claim.—Suspending the top flats or lags upon pivots in the centre of their ends, by which they can be raised out of the way of the

adjoining flats or lags, to be turned by means of a crank working in pinions upon their pivots, or the equivalent thereof; the whole being constructed and arranged substantially as described, for the purposes set forth.

Also, stripping the flats or workers by a rotating brush, so arranged that a card may, in turn, strip the brush and return the strippings to the main cylinder, substantially in the manner and for the purposes described.

No. 15,313.—HORACE WOODMAN.—*Improvement in Machinery for Cleaning the Top Flats of Carding Engines*.—Patented July 8, 1856.

The combination of the different parts mentioned in claim 1st is for the purpose of moving the cleansing frame through the space of two top cards at one complete revolution of the gears Y Y^1 , and of holding it there at rest, while the lifting, stripping, and depressing machinery does its office; the movement of the cleansing frame occupying one-half of said revolution of said gears, and the holding of the frame and process of stripping a top card occupying the other half of said revolution. The nature of the other features of this invention can be understood by reference to the claims and illustrations.

Claim.—1st. The arrangement of gears Y Y^1 on the cleansing frame, and in combination therewith, in the manner substantially as described; the studs or pins J and J^1 on the inner sides of said gears, and the levers I and I^1 , and the sliding-bars K and K^1 , operating together with the slotted or corrugated arches or flanges R R^1 .

2d. I claim the said slotted or corrugated arches, whether cast with the main frame of the card or attached thereto, as specified; and this I claim as a means of holding the cleansing frame in place while the top cards are raised, stripped, and depressed, and also as a means of regulating the reciprocating movements of said traverse or cleansing frame from one side of the card to the other, and also from one card to any other.

3d. I also claim the combination of the lever α and stripping rod g , with its dogs M and M^1 , and sliding-clutch, arranged as described, to reverse the motion of the cleansing frame.

4th. I also claim the arrangement of waste-pan F , as described, with a narrow bar and strip of filleting attached to the front edge of the pan, so placed as to remove the waste from the cleaning-bar V , to produce a clean brush-bar for the cleaning of each top card.

No. 14,481.—GEORGE WELLMAN.—*Improvement in Stripping Top Flats of Carding Machines*.—Patented March 18, 1856.—Patented November 25, 1853, England.

A detailed description of this machine would occupy too much room to be given here.

Claim.—1st. The combination of the segmental gear L , with its projecting rim Q and the pinions O and P , with their attached notched

plate wheels; all as applied to the shafts K M and N, and for the purpose of giving the alternate intermittent movements to the shafts M and N, as specified.

2d. I claim the arrangement of the mangle pins $Z^1 Z^1$, &c., in the arc of a circle, upon the centre of which the frame carrying the stripping apparatus vibrates, for the purpose of avoiding intermediate gearing and consequent back lash, as specified.

3d. I claim the combination of the cams X X with the chain belt Q^1 , the chain pulleys R^1 , and shaft M, arranged and made to operate together, as described.

4th. The combination of the cams X X with the levers Y Y, carrying and operating the stripper card in the manner specified.

5th. The combination of the cams X X with the lifting rods Z Z and the levers Y Y, arranged and made to operate in connexion, as described.

6th. The combination of the springs $F^1 F^1$ and the pins $E^1 E^1$, and their application to the frame S, for the purpose specified.

7th. I claim a mechanism for cleaning the stripper card, arranged and applied substantially as described.

8th. I claim the segmental gear L and its rim Q, as applied and operated, for the purpose of giving motion both to the mechanism for raising, stripping, and depressing the top card, and to the mechanism for moving the raising and stripping mechanism from one top card to another—not moving both at the same time, but alternately, first one and then the other.

No. 15,016.—FOSTER NOWELL.—*Improvement in Wool-Carding Machines*.—Patented June 3, 1856.

The belt or apron T T passes around the rolls R R, the lower part of the belt taking the form of the outside circumference of the rubbing cylinder L. In the circumference of these rolls R R is cut a groove, and on the inside of the aprons are fastened strips of leather which run in said grooves and keep the belt from vibrating. The rolls nearest to the doffer cylinders B B are adjusted so that the outside of the apron will just clear the teeth of the doffer cylinders. As the wool on the rings of card clothing of the doffer comes to the apron or the rolls R R, the apron wipes it off from the rings in the form of ribbons, and conducts it between the apron and the rubbing cylinder, when, by the vibration of the rubbing cylinders L, (by mechanism, as shown in figures 1 and 2,) they are each gathered and rolled into a round strand of roving, and afterwards ejected from between the rubbing cylinder and the apron in a condition suitable to be wound upon spools.

Claim.—The use in carding machines of two surfaces for conducting and rubbing the sliver from the ring doffers, one of which is cylindrical and of permanent form, and the other a belt or apron of flexible material, and capable of adjusting itself to the shape of the cylindrical rubber and the sliver or roving between itself and the cylindrical rubber.

No. 15,905.—JOHN L. TUTTLE.—*Improvement in Card-Teeth for Machine Cases*.—Patented October 14, 1856.

This invention consists in preparing steel wire by passing it through grooved rollers of such a form as will flatten it out on one side of its centre to a knife-edge; so that when set and a surface ground on them, the same grinding shall form the sharp points thereon.

Claim.—I am aware that R. Kitson, in his patent of November 11, 1851, represents a tooth of soft iron and of small wire, with a cross-section resembling the cross-section of my card-teeth; this I do not claim.

But I *claim* the making of card-teeth by giving to steel wire the form described, and substantially in the manner set forth; so that when set and a surface ground on them, the same grinding shall form the sharp points thereon.

No. 15,767.—DAVID B. KERR.—*Improvement in Manufacturing Ingrain Carpeting*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim.

The inventor says: I do not claim the invention of a party-colored carpet, nor the manufacture of a carpet composed in part of solid colored yarn, and in part of party-colored yarn, when the two are combined in a manner different from that described as my invention.

Nor do I claim any particular method of party-coloring yarn for carpets, nor the weaving of carpets in a power-loom. Nor do I limit myself to a carpet in which all the warp threads are party-colored.

But I *claim* a party-colored ingrain carpet, in which the warp threads of one or more plies are party-colored, in whole or in part, and are combined with solid colored weft threads to form the design, substantially as set forth.

No. 14,585.—JOHN R. HARRINGTON.—*Machines for Making Carpet Lining*.—Patented April 1, 1856.

Rolls of paper and wadding being placed on their respective bearings, and the troughs being supplied with gum solution, the ends of the rolls are introduced between the pressure rollers k and h , and then between the creasing rollers j and j^1 , whence they descend in proper folds.

Claim.—1st. The arrangement of the horizontal spindles or rollers b and b^1 , on which the outer sheets or rolls of paper or cloth d and d^1 are wound, in combination with the intermediate spindle e on which the inner layer of cotton or other filling g is wound, the whole being supported and operated in the manner and for the purposes described.

2d. The arrangement of the rolls h and h^1 in combination with the spindles b and b^1 and e , for the purposes as set forth.

3d. The troughs p and p^1 , that contain the size or mucilage, and the brushes q and q^1 that administer it, when used in combination with the

spindles b and b^1 and c , the whole being arranged and operating in the manner and for the purposes as specified.

4th. The creasing rolls $j j$, when used in this connexion, each having alternate grooves l and ridges k at the requisite distance for the folds, for the purpose of folding and measuring, as described.

5th. The box or platform m placed below the delivery of the rolls, and having a falling front n , as described.

No. 16,275.—EDWARD B. HOWE.—*Improvement in Trimming Card-Clothing*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The adjustable guide and clamp R , with its adjustable tool-holder M operated thereon, and the guide-bar J for guiding the card clothing by the card teeth set therein, and the points i in this bar J to hold the card clothing while it is being trimmed on both edges at the same time and parallel with the card teeth therein; these parts being arranged and operated in the manner and for the purposes set forth.

No. 14,659.—JONATHAN J. HILLARD.—*Improvement in Spreading-Rollers for Stretching Cloth*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I am aware that the revolving spreader, formed of serrated bars arranged parallel to the axis, or encircling the same, and formed, each line of bars, in two lengths or parts, having longitudinal play in opposite directions parallel to the axis, is, in itself, no new device, but is a well known form of spreader used in machines for stretching and widening cloth; such, therefore, I do not claim; nor yet operating the stretching bars, as specified, by wheels set obliquely on the shaft or axis of the spreader, as this has before been done; but I *claim*, as a new and useful improvement on the revolving reciprocating spreader, the jointed and pivoted arrangement of the serrated stretching bars $B B B^1 B^1$, with the obliquely set wheels E on or round the axis of the spreader by means of the loose radial spokes $D D$ and transverse pivots $a a$, for connecting the stretching bars with the obliquely set revolving wheels, and whereby increased freedom in the longitudinal play of the bars is obtained, and the cloth thereby more easily and effectually stretched without injury and without the interposition of lubricating material where such would be apt to soil the cloth, as set forth.

No. 14,725.—JAMES H. KINYON and JAMES HOLLINGSWORTH.—*Improvement in Cotton-Cleaners*.—Patented April 22, 1856.

The bottom of the hopper R is furnished with openings m , through which the hooked teeth n on the feed-rollers $F^1 E^1$ pass, to draw the

cotton downward, until the two rotating brushes S S catch it. These brushes distribute the material on each side, whence each half is directed to the finishing rolls J I G H and brushes P P by the inclined guides *h l*.

The inventors say: We are aware that Alexander Jones has represented in his patent of April 25, 1837, two machines united in one frame; but they have no necessary connexion with each other, nor is there any part of the operation of cleaning or feeding that is common to both machines as in ours. We do not, therefore, claim the uniting together of two machines; but we *claim* the so arranging of the hopper R, feed-rolls F¹ E¹, and brushes S S, that they shall draw in the material, divide it into nearly equal parts, and throw one half in one direction and the remaining half in a contrary direction, to be acted upon by other rolls and brushes, as shown.

No. 14,965.—WILLIAM B. LINDSAY.—*Improvement in Cotton Gin.*—Patented May 27, 1856.

When the block D is at the end of its downward stroke, the cards *a a* will catch the cotton A¹, and as the block ascends, the cards will draw the cotton between the ribs *c*; the spaces between the ribs being too narrow to allow the seed to pass up, seed will fall through the slots *h*, and the cotton will be carried upward by the cards and between the cards E E. The cards E E are forced back by the block D and cards *a*, and serve to strip and loosen the cleansed cotton in the cards *a*, at the same time preventing the machine from being choked.

Claim.—The combination of the reciprocating cards *a a*, vibrating stripping cards E E, and ribs *c*.

No. 15,381.—JAMES B. MILES.—*Improvement in Cotton Gins.*—Patented July 22, 1856.

The revolving motion of the pulley C causes the lever G to vibrate by means of the arrangement of the eccentric D and connecting-rod F; and the pawls H, sliding with their bearings *e* in a groove *d*, operate upon the ratchet-wheel K, which imparts motion to the feeding-roller O. The cotton passes over the swing-board L; and, when the machine feeds too rapidly, the roll of cotton will pass under the swing-board, press against the concave side, and press it towards the frame B, as represented in fig. 2. The lever N is then elevated, J depressed, and the bearings *e* of the double ratchets H are depressed by sliding in the groove *d*, thereby retarding the motion of the ratchet-wheel K and feed-roller O.

Claim.—The arrangement of the swing-board L, in combination with the mechanism described, so that the varying size of the roll of cotton in the gin shall govern the feed and keep it uniform, or nearly so.

No. 15,906.—JOHN L. TUTTLE.—*Improvement in Cotton Gins.*—Patented October 14, 1856.

The cotton is carried up from the breast of the gin by the teeth of the cylinder B, and the straight-edge *c*, made of steel, passes underneath the cotton seeds and raises them up on to itself, where they are met by the ribs *a* on the roller G and knocked back into the breast of the gin, whilst the fibre is carried through under the straight-edge, and may be taken off by a brush behind the cylinder in the usual well known way.

The inventor says: I am aware that a guard or shield, which might be termed a straight-edge, though not thin enough to pass under the seeds, has been used; but do not know that a roller, such as described, has ever been used in connexion therewith, so as to completely keep back the seeds, which my invention does.

I do not claim the knocking-roller and straight-edge, when used separately, with the toothed-cylinder, as they have been thus used.

But I *claim* the combined use of the straight-edge and roller for stopping and returning the cotton seeds to the breast of the machine, and allowing the fibre only to pass through, substantially as set forth.

No. 15,930.—JAMES B. MELL.—*Improvement in Cotton Gins.*—Patented October 21, 1856.

The cotton is shaken by hand into the hopper N, and is carried round by the teeth G of feed-roller B to the gin rollers C. The cotton is slightly opened by the teeth G; the blast of fan E, which revolves rapidly, blows the dirt out of the cotton, and also blows the dirt and seed, after they are separated from the cotton, out of the perforated concave R. The cotton is then brought by the teeth G to roller C, is drawn through the grooves of these rollers, and is separated from the seed; the brushes H prevent the cotton from winding round the rollers. After the cotton has passed the rollers C, it is met by the blast of fan F, and is driven out of the aperture at the end of O O.

The inventor says: Whether the arrangement of fan E within the roller B, as described, be new and be my invention, I do not claim it in these letters patent, nor do I waive my right to it in another patent.

But I *claim* the arrangement of two or more sets of ginning rollers, in an arch of the radius of the cleaning cylinder, in combination with brushes so arranged as to keep the rollers clean, and the fan F for removing the cotton from them as fast as ginned, substantially as described.

No. 16,022.—WILSON A. PURDOM.—*Improvement in Cotton Gins.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. Giving to the cotton to be ginned within the feed-box and before the saws H a reciprocating motion, by means of the cor-

rugated cylinder A, or a modification of such cylinder, and the corrugated aprons B, or either of them separately, or their equivalents, so that the cotton will pass back and forth slowly in bulk, or nearly so, before the saws; thus presenting a fresh surface to the action of the saws throughout the entire length of the saw cylinder, without leaving any of the saws idle, and without the accumulation of seed at one end of the box, or the banking up of the cotton at either end.

2d. For the purposes aforesaid, I claim the cylinder A, or its equivalent, whether it is placed within or outside of the cotton roll, and whether it is permanently attached to the apron B or not; also whether it revolves or not, or whether that revolution is continuous or intermittent.

3d. And for the purposes described, I claim the corrugated apron B, or its equivalent, whether it is operated conjointly with the said cylinder A or not.

No. 16,096.—C. A. McPHETRIDGE.—*Improvement in Cotton Gins*.—Patented November 18, 1856.

The object of the friction spools N is to prevent the friction of the saws A on the sides of the breast-plate L, where it runs through, and to increase the power by means of the leverage of the spools. They also lift all extraneous substances over the saw, and allow them to pass with the roll and fall off with the seed. The spools N are so arranged that the peripheries of the spools stand above the periphery of the saw; thus, as the saw passes between the spools they are made to revolve in the same direction, and as soon as the cotton is brought in contact with the spool it is regularly stripped off and drawn downward between the spools on the further side, while on the front side, it, with the seed in it, is lifted up and follows the roll, thus rendering it impossible for the gin to choke or break.

Claim.—1st. The friction spools N, arranged as described, in combination with the saw, for the purposes described.

2d. The breast-plate, as described, in combination with the spools N, as set forth.

No. 15,904.—JOHN L. TUTTLE.—*Improvement in Manufacturing Cylinders for Cotton Gins and Machine Cards*.—Patented October 14, 1856.

A paper cylinder *g* containing the teeth *h* is slipped over the cylinder *d*, leaving a space between the cylinder *d* and the paper cylinder *g*, into which the teeth *h* project; fluid metal is then poured in at the top of the gutters *c*, which runs down said gutters and through the holes *e* into the space *i*, completely filling up said space and uniting the ends of the teeth with itself and the cylinders, so as to form one rigid mass. After the cylinder is cooled the paper is soaked off, leaving the teeth *h* free and exposed to be ground for further use.

Claim.—The manner described of making cylinders for cotton gins, or for carding or cleaning engines, viz: by introducing the fluid meta

which is to unite the teeth to the cylinder between the cylinders *a d*, and through the openings *e* into the space *i*, which unites the whole into one rigid mass, and avoids the danger of irregular flowing of the melted metal, as set forth.

No. 15,138.—L. JOHN MALLARD and WILLIAM S. BAKER.—*Improvement in Feeders for Roller Cotton Gins*.—Patented June 17, 1856.

The cotton is received at the opening *o* and drawn in by the teeth *t*, which, by the rapid rotary motion of the cylinder *c*, open, clean, and free the cotton from loose and broken seeds, which fall through the screen *g*. The gin rollers *G* seize the fibres and strip them from the seeds, which fall back through the screen, any excessive accumulation of cotton between the rollers being prevented by the action of the teeth, which drag the surplus away from the rollers and carry it round between the cylinder and its screen, thus preventing the heating of the rollers and clogging and consequent jerking of the machinery.

The inventors say: We do not claim any of the parts of the above described machine, separately considered; but we *claim* the combination of the screen *g* with the revolving toothed cylinder *c*, constructed in the manner described, and when so placed in relation to the ginning rollers *G* that any excessive accumulation of cotton between them shall be removed or prevented, and the excess be retained between the cylinder and screen until its quantity shall be equalized and relieved by the gin.

No. 15,703.—JOHN MARLAND.—*Improved Process of Manufacturing Delaines*.—Patented September 9, 1856.

This invention consists in subjecting wool to a combined process of combing and carding, whereby the evils attendant upon the sole use of either are entirely avoided, and the soft feel and pliant texture of the one are united with the evenness of thread and uniformity of appearance of the other.

Claim.—The method of operating upon wool by combing, and subsequently carding, in the manner and for the purpose set forth.

No. 15,585.—BENJAMIN WEIGERT.—*Improvement in Water-proofing Textile Fabrics*.—Patented August 19, 1856.

The nature of this invention consists in permanently obstructing the water-passages of textile fabrics with molecules of aluminum enveloped in glue, making the fabric permanently, that is, even after repeated washing, impermeable to water, without changing any of its ordinary properties, or its permeability to air.

Claim.—The treatment of textile fabrics with a solution of acetate of alumina and glue, prepared in the manner and from the ingredients and proportions stated, and for the purpose specified.

No. 16,293.—WERNER STAUFEN.—*Improvement in Preparing Vegetable Fibres for Stuffing Mattresses and Cushions.*—Patented December 23, 1856.

Vegetable fibres are subjected to a process of twisting, and the twists or ropes thus formed are immersed in water and allowed to remain therein until the fibres become perfectly soft and pliable. The twists are then removed from the water and subjected to such a degree of heat as to thoroughly dry them. The twists may then be picked to pieces, and the fibres will be found to be permanently curled and elastic.

Claim.—As a new manufacture, an article for stuffing mattresses, cushions, &c., produced by permanently curling any suitable vegetable fibrous substance, by the method substantially as set forth.

No. 16,149.—HORACE W. PEASLEE.—*Improvement in Drying-Cylinders for Fibrous Manufactures.*—Patented December 2, 1856.

The spiral coil D is wound upon a wooden cylinder B, which is covered with non-conducting material C. The coil is enclosed within a metallic casing E fastened to the heads A, which forms the heating or drying surface of the cylinder.

Claim.—The employment of a spiral tubular heater upon a non-conducting cylinder, in combination with an exterior metallic casing, as set forth.

No. 14,559.—WILLIAM FUZZARD.—*Improvement in Cloths for Felting Hat Bodies and other Articles.*—Patented April 1, 1856.

H H represent the hat bodies which are laid between folds of the corrugated apron G. The apron when folded is rolled around a small corrugated roller I, and is then placed between the lower part of the endless apron F. The corrugated apron is thus brought in contact with the whole surface of the hat bodies, and the operation of felting is accelerated fully one-third, and the work is done more perfectly than by the usual mode.

Figure 4 shows two different forms of corrugation.

Claim.—The use of corrugated apron G, constructed of any proper material, substantially as and for the purpose specified.

No. 15,508.—E. R. BARNES and JAMES B. BLAKSLER.—*Improvement in Felting Hat Bodies.*—Patented August 12, 1856.

The articles to be felted, as represented in dotted lines, are placed upon the front end of the endless apron B, which is formed of the slats *c* secured to India-rubber belt *d*, the latter passing around the rollers *a*. Motion being given to the drawing shaft M, the apron B is moved in the direction of the arrow, and a reciprocating motion is

given to the board I. The materials to be felted pass beneath the board I and the apron B, and are finally delivered on bed H.

Claim.—The peculiar arrangement of suspending and rendering elastic and adjustable the endless rotating bed of felting machines, substantially in the manner described, so that it may be elevated or depressed, while in operation, and at the same time possess an oscillating motion, in order to adapt itself to the varying stages of the process of felting.

No. 15,627.—JOSEPH THOMAS.—*Improvement in Machinery for Felting Hat Bodies.*—Patented August 26, 1856.

The articles to be felted being put into the machine, the crank-wheel N will, in its revolution, cause the discharging wheel, which rotates upon shaft K, to operate and carry forward the goods, while the crank I, by means of the connecting-rod M and lever L, will give a vibratory motion to the wheel E, which rubs the goods back and forth against the plate F as the discharging wheel carries them forward; which operation is repeated until the goods are sufficiently felted.

Claim.—In hat sizing machines the employment of a discharging slotted wheel, when arranged as described, for feeding the goods into and through the machine, essentially as set forth.

No. 14,845.—JAMES S. TAYLOR.—*Improvement in Machinery for Felting Hat Bodies.*—Patented May 6, 1856.

Motion being given to the cylinder of rollers, the hat bodies Q will be carried around between the series of rollers and the rubber E, and discharged at *a*¹. The bed having a vibratory motion given it by the rods or bars F F, and the rollers M rotating on their axles in the direction indicated by the arrows, in consequence of the wheels N bearing upon the ledges *i i*, the hat bodies will consequently be subjected to the necessary rubbing and rolling, the rollers M turning in the direction as shown, insuring the rotation of the articles in the space P, and thereby causing them to be perfectly felted.

The inventor says: I do not claim of itself as new a vibratory bed or rubber operating in connexion with rollers for felting hat bodies; nor yet merely of itself as new, rollers having a positive motion or reverse action for various rubbing and other purposes, as such are old and common to felting and other machines.

But I *claim* the vibrating rubber or bed E, in combination with the rubber M, having a positive movement or rotation on their own axes given them in a direction causing the outer points of their peripheries to travel in the direction of their general travel, as required by the rotation of the central shaft B, as specified, when the same are arranged for operation together as herein set forth, for the purpose described.

No. 15,261.—JOSEPH THOMAS.—*Improvement in Machinery for Felting Hat Bodies*.—Patented July 1, 1856.

The revolving crank-shaft H will cause the screw to work the hopper by means of the gear which is fast thereon, while the cam N, working in the grooved piece at M, will cause the screw-shaft to vibrate and advance to feed the goods and felt or size them by the conjoint action of the hopper surface and the segments F F.

Claim.—Giving the vibrating motion to the reservoir wheel D, by the combined action of the screw K and cam N, (or an equivalent device,) when arranged and operating essentially as described and for the purpose set forth.

No. 15,290.—WILLIAM FUZZARD.—*Improvement in Machinery for Felting Hat Bodies*.—Patented July 8, 1856.

The box A is supplied with the requisite quantity of water, which may be kept in a heated state by a furnace placed underneath. The hat bodies to be felted are rolled around a cylinder *f*, and are placed within the fold of the apron E. A rotating reciprocating motion is then given to the roller C, and the end of the apron which is attached to the roller C, will be raised up and down; the hat bodies being subjected to a rolling motion, and also to a certain degree of pressure against the platform D, which pressure may be increased or diminished by regulating the position of the platform D, as indicated by the dotted position of said platform.

Claim.—The apron E connected to the vibrating or reciprocating roller or cylinder C, and to the adjustable platform D, and arranged in relation to the reservoir or box A substantially as described and for the purpose specified.

No. 15,375.—LANSING E. HOPKINS.—*Improvement in Machines for Felting Hat Bodies*.—Patented July 22, 1856.

The hats *r* are placed in bags in the interior of a revolving apron *n*. The vibrating beater *b* works the hats between its corrugated sides *b* and the similarly corrugated beater-heads *q*. The distance between the beater *b* and the beater-heads *q* can be adjusted by means of the screw-nuts *o* and bolts *p*.

Claim.—1st. The combination of the beaters, the revolving belt, and the beater-heads, operating substantially as described.

2d. The adjustability of the beater-heads, in combination with beaters having a positive motion, substantially as shown.

No. 15,443.—ALVA B. TAYLOR.—*Improvement in Machinery for Forming Hat Bodies*.—Patented July 29, 1856.

The operation of this machine is as follows: Motion being imparted to the main shaft E, a weighed quantity of fur, sufficient to form one hat body,

is laid upon the feed-apron C and is conveyed to the feed-rollers *e e*, which present it to the main picking cylinder B, which, together with the secondary picking cylinder B¹, discharges the picked fur; the latter is drawn to the one of the three perforated cones G¹ G² and G³ which is nearest to it, and as this cone rotates, it collects the fur upon it. When the charge upon the apron is exhausted, the operator applies a cover to the bat, and turns the pyramidal draught-box H one-third around, which movement brings a second cone in the proper position to receive fur from the picker; while the first one, with the bat and exterior cone upon it, is brought to the hardening apparatus N. The three cones go successively through the same operation as the one here described.

Claim.—The combination of a perforated cone, picking apparatus, and feeding apparatus, located and arranged as described.

The combination with a main picking cylinder of a secondary picking cylinder, operating substantially as set forth.

The pyramidal draught-box, constructed substantially as set forth, in combination with a fan and fan-case for generating the currents of air.

No. 15,715.—D. G. WELLS.—*Improvement in Machinery for Forming Hat Bodies.*—Patented September 9, 1856.

The endless apron C receives the fur, and carries it to the feed-rollers D; and passing between these rollers it comes in contact with the picking cylinder E, and thence is thrown off towards the perforated cone E, which revolves on its vertical axis. The rotary picker E is furnished with serrated fans L, which serve the double purpose of picking and separating the fur, and then blowing it off towards the hat-former F. The air enters the picking cylinder at each end through the apertures N, and, passing out between the fans L, is thrown off at its periphery, carrying with it the fur as it comes from the feed-rollers D. The cone F is exhausted by means of the fan-blower G; by this fan a secondary current of air is caused to pass upwards and to escape through the wedge-shaped opening P R S, created by the valves K, which serve to regulate said opening, and the blast passing through it causes the fur to be distributed equally over the surface of the former F.

The inventor says: I do not claim the use of the secondary currents of air, nor valves to control them.

1st. I *claim* the mode of guiding the currents of air from the picking cylinder in their passage to the cone, substantially as described.

2d. I claim the mode of regulating the secondary currents of air by means of the wedge-shaped apertures formed by the valves K K, substantially as set forth.

No. 15,903.—JAMES S. TAYLOR.—*Improvement in Machinery for Forming Hat Bodies.*—Patented October 14, 1856.

The fur is placed on the conical feed-table B, and motion being communicated to the machine by revolving the shaft H, the feed-table is revolved under the conical rollers P; these draw the feed up between

them to the picker O, which revolves with a rapid motion, picking the fur from the conical rollers, whence it is drawn on to the exhausted perforated cone L. The brush T, revolving in a vat of water, throws the water upon the bat as it is formed on the cone L, thereby saturating it preparatory to removing it from the cone without tearing or rupturing the same.

The inventor says: I do not claim a perforated cone or exhaust, both of which are well known devices used in machinery for forming fur hats; neither do I claim a picker to pick up or blow the fur on to the cone, as that is a well known device used in machinery for picking fur, wool, or cotton. Neither do I claim moistening or wetting the hat preparatory to removing it from the cone.

But I *claim* the revolving feed-table, in combination with the picker, cone, and exhaust, operating in the manner and for the purpose set forth.

I do not claim the principle of wetting or moistening the hat when formed on an exhausting cone, for that is a principle well known; neither do I claim the combination of currents of air and the currents of numerous jets of hot water in the hardening or wetting process, as that is a combination found in D. Barnum's patent, July 1, 1851.

But I *claim* the combination of the revolving brush, arranged as described, with revolving perforated cone, for the purpose of moistening the fur as it is thrown upon the cone, substantially in the manner described.

NO. 14,476.—ALVA B. TAYLOR — *Improvement in Machinery for Making Hat Bodies*.—Patented March 18, 1856.

A quantity of fur is laid upon the feed-apron C, and is conveyed by it to the feed-rollers *e e*, which present it to the picking cylinder B. When the fur leaves the cylinder, it is drawn towards the perforated cone G². As soon as the whole of the fur is collected upon the perforated cone, a cover is applied to the bat, and the draught-box H is turned round one third. This movement brings a second cone in its proper position, while the first one is brought to the hardening apparatus. This hardening is effected by the combined action of pressure and motion by means of the weighted rollers N and the bar O, arm *n*, pins *r*, and scolloped rim of wheel P.

The fan M is situated in the fan case I, at the mouth of a circular opening in a partition L which divides the fan case into two parts, the larger of them communicating with the draught-box, and the smaller with an air trunk.

The radial partitions *s s s*, together with the arrangement as seen in figures 4 and 5, serve to guide the compressed wind through the cone into the interior of the bat.

Claim.—The arrangement for hardening the hat body in a dry state by machinery operating substantially as herein set forth.

I also claim the method of facilitating the removal of the hat from the perforated cone by means of a blast of air forced through the cone.

No. 15,008.—SYLVESTER H. GRAY.—*Improvement in Machines for Felt-ing Hat Bodies.*—Patented June 3, 1856.

The journals of the two rows of rollers *bb* and the polygonal rollers *g g* (around which the endless apron *e* revolves) turn in boxes in the side pieces of a carriage *c*, which slides in the side pieces *d d* of the main frame. The shaft *h* of one of the polygonal rollers passes through a mortise *i*, and carries a cog-wheel *j*, which engages the pinion *l* on shaft *k*. The other end of shaft *k* carries pulley *m*, which receives a band *n* from pulley *o* on crank-pin *p*, whereby the rotary motion is imparted to the endless apron bed. The crank pin *p* is attached to pulley *q* on shaft *r*, which passes through the other side of the frame, where it is provided with a corresponding crank-pin *p*¹. These two crank-pins *p* and *p*¹ are connected by rods *t t* with the two projecting ends of the shaft *k*, by which a longitudinal reciprocating motion is imparted to the carriage and endless bed. The shaft *r* is revolved by means of pulley *w*, band *u*, and the pulley on the driving-shaft *v*.

The inventor says: I am aware that hat bodies have been felted or sized by being rolled between a bed and pressure plate by the action of a compound continuous and reciprocating motion, and therefore I do not wish to be understood as claiming the method of giving the felting action by such compound motion; but I *claim* the manner in which the compound continuous and vibrating motion is imparted to the endless bed.

No. 14,521.—ALBERT SPENCER.—*Improvement in Machines for Sizing Hat Bodies.*—Patented March 25, 1856.

The rubber board *G* is made with a gradually increasing pitch of face (as seen at *g*²) for the introduction of the felt. The rubber board is vibrated on the pin *H* by means of lever *L* and tapis wheel *N*, thereby causing the hat body to felt up. *F* is a weight at the end of lever *E*, which presses the disk against the hat body.

Claim.—The disk wheel having been patented, I disclaim the use of it, irrespective of my combination, and therefore limit myself to the combination, as herein set forth.

I *claim*, therefore, the application and use of the combination of the disk wheel *D* and the rubber bed *G*, when the bed receives a vibratory motion, substantially in the manner and for the purposes herein before described.

No. 14,960.—SAMUEL C. KETCHUM.—*Improvement in Machines for Sizing Hat Bodies.*—Patented May 27, 1856.

The object of this invention is to obtain an elastic or self-adjusting rubber bed, upon which the roll of felt would receive a constant elastic pressure throughout the entire circumference of the shell, though constantly varying in size, in consequence of its rolling action.

Claim.—The use of the combination of the elastic shell *D* (upon the revolving drum or cylinder *C*) with the vibrating case *I* surrounding the same, when made for the purposes substantially as herein set forth.

No. 15,154.—JOSEPH THOMAS.—*Improvement in Machines for Sizing Hat Bodies.*—Patented June 17, 1856.

Motion being given to the wheel T, the cams Y Y strike the levers L L, giving a vibratory motion to the carriage K, which latter, in combination with the ratchet-rollers M M and c, feed the material into the machine.

The crank Z imparts a vibratory reciprocating motion through the lever H to the levers J, and consequently to the wheels E and U. These wheels are covered with any material to produce the requisite friction upon their peripheries. During a half stroke of the crank Z the dog X will drag over the teeth of the ratchet-wheel V, and thus allow the wheel U to remain without motion; but during the other half stroke the stationary pin c will cause the dog X to catch in the ratchet-wheel V, and move it forward; thus giving an advance movement to the wheel U, which presses upon the wheel E, and causes the same, together with the wheel D, to advance.

The bar P is attached to a lever Q by a bolt d. As this lever is weighted down by moving the weight S, it will draw the corrugated plate closer to the wheel D, and also carry the apron C 1 closer to the ratchet-rollers, and by this means render those parts adjustable as to pressure of the material to be sized or felted.

Claim.—1st. Combining with the wheel D the wheels E and U, (or their mechanical equivalents,) for giving the main wheel a vibrating motion when used with a stationary plate or bed, in order to rub the goods back and forth; and also in combination therewith the mechanism for giving the main wheel the constantly advancing motion, when arranged and operating as described.

2d. Combining and arranging the circular plate or bed B 1 and table C 1 in such a manner that, by the levers A 1 (or their equivalents) and cords b b, the same mechanism may adjust the plate B 1 to the wheel D, and also the table C 1 to the ratchet-rollers, and thus give any pressure desired to the goods, substantially as described, and for the purposes set forth.

No. 15,534.—ALVA B. TAYLOR.—*Improvement in the Manufacture of Hat Bodies.*—Patented August 12, 1856.

In this machine for manufacturing hat bodies the picking cylinder B is opposite the perforated cone G; hence the fur which proceeds from any portion of the picking cylinder lodges upon a corresponding opposite portion of the perforated cone; and if it is necessary to increase the thickness of the bat at any particular part of the perforated cone, the operation is effected by distributing the charge of fur upon the feed-apron C in such a manner that there shall be more fur conveyed to that part of the picking cylinder which delivers fur to the part of the perforated cone where the bat is to be made thickest.

Claim.—Regulating the distribution of the fur or other stock upon the perforated cone, by varying the feed of the picking cylinder at different parts of its length.

No. 15,929.—JOSEPH McCracken.—*Improvement in Sizing Hat Bodies*.—Patented October 21, 1856.

The object of the hollow India-rubber cylinder A is to sustain a perfect roll in the felt, and yet be elastic enough to give the roll of felt in passing through the machine an easy working motion, so as to size up the most delicate felt textures, while the water of the interior folds of the felt is allowed to escape through the perforations B.

Claim.—The use of the India-rubber or other elastic perforated cylindrical roller for working or sizing hat bodies upon, when constructed in the manner and operated in the mode substantially as set forth.

No. 16,305.—SYLVESTER H. GRAY, assignor to Himself and FRANCIS IVES.—*Improvement in Machinery for Sizing Hat Bodies*.—Patented December 23, 1856.

The hat bodies are placed upon the inclined feed-board *f*, and pass down upon the endless carrying bed *c*, where they are worked by the combined motion of the endless carrier and the vibrating carriage *b*; they then pass down the guide *h*, and between the revolving endless bed *c* and steam chest *d*, and return to the front end of the machine, there to be received by the operator.

Claim.—Attaching the guide *h* to the rear end of the vibrating carriage *b*, in the manner described, for the purposes specified.

2d. The use of the adjustable steam chest *d*, in combination with the vibrating carriage *b* and the revolving endless bed *c* on carriage *b*, made and operating substantially in the manner and for the purpose specified.

No. 14,862.—A. C. FULLER.—*Improvement in Hat-Felting Machines*.—Patented May 13, 1856.

The hat bodies Q are rolled and fed in between the lower part of the drum B and shell C, and are carried around and discharged at the upper end of the shell C. The polygonal form of the drum causes the hat bodies to be compressed at intervals. The rollers D D check the speed of the hat bodies, and prevent them from passing too rapidly out from between the drum and rollers.

The inventor says: I do not claim a vibrating rubber-bed in combinations with rollers having positive and reverse action; but I *claim* the polygonal drum B, constructed and operated substantially in the manner and for the purposes described.

No. 14,121.—JAMES S. TAYLOR.—*Improvement in Machinery for Felting Hats*.—Patented January 15, 1856.

The hat to be felted is placed in the cavity at the end of the rollers; the two lower rollers B B merely rotate on their axes, but the two upper rollers have a lateral vibrating motion, which is given them by the cam D.

The inventor says : I do not claim a series of rollers placed within a rack or frame independent of giving two or more of said rollers a lateral or vibrating motion, for they have been previously used.

Neither do I claim giving the hats a rubbing or vibrating motion, as that is a motion indispensable in all machinery for felting hats.

Nor do I claim the contrivance above set forth as an independent invention, but merely as an improvement on my hat-felting machine, patented May 3, 1853; and the patent, if obtained, will be subordinate to the previous patent, and cannot be used without a license from the legal owner of the patent of 1853.

But I *claim* the combination of machinery operating in the manner substantially as set forth, for the purpose of giving the hat a rotary, longitudinal, and vibratory motion at one and the same time, thereby subjecting the hats as they pass along the chamber *a* between the rollers B B B B to a kind of rubbing or friction similar to the rubbing performed by hand, and therefore causing the hats to be felted in a more perfect and expeditious manner than by the combination of any machinery ever before used.

No. 14,330.—RUSSELL WILDMAN.—*Improvement in Machinery for Hardening Hats*.—Patented February 26, 1856.

When the cone C has received a slight covering of fur, the elastic rubber felter F is swung (from the position represented by dotted lines) in contact with the cone, as represented by full lines. While the cone is revolved and the felter carried round with it, the latter at the same time receives a rapid vibratory motion. A tremulous motion is thus imparted to the elastic surface of the felter, by which means the felting process is to be facilitated.

Claim.—The inflated elastic rubber herein described, constructed and operated in the manner substantially as herein set forth.

No. 14,401.—SAMUEL A. KINSMAN and SAMUEL FIELD.—*Improvement in Machinery for Ironing Hats*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engraving. E F and 7 are the flats.

The inventor says: We do not claim any peculiar form of hat-holder, nor any spring movement to a side flat, nor a fan to regulate the downward movement of the hat-block, nor any arrangement of toggles to operate the crown-flat; for all of these we are aware are embraced in a patent granted Dexter Dennis on the 4th July, 1854. But what we *claim* is, arranging the cam 14 so that, when operated by the gear 15 and 17, substantially in the manner described, it will control the vertical movement of the hat-block S R through levers 21 and N, in combination with the lever L, arranged substantially as described, to control the lateral movement of the hat-block, and thus secure the adequate pressure on all parts of the hat at one time.

No. 14,062.—JOSEPH JOHNSON.—*Improvement in the Manufacture of Hats*.—Patented January 8, 1856.

The nature of this invention consists in using a fabric made after the manner of hair-cloth and consisting of slender splints of whalebone, willow cane, or wood fibre, interwoven with common thread and cemented together with water-proof gum; and also in using in the construction of these hats a thin metallic ring E, for the purpose of keeping the upper part of the hat in its proper cylindrical form when the tip is made lighter and thinner than the side crown thereof.

The inventor says: Having thus described my invention and shown its utility, I proceed to state that I do not claim, in manufacturing hats, the use of soft water-proof gums, nor the combination of the same with whalebone, wood fibre, cork, tarleton, or with either of them, as these have been used before; nor do I claim the peculiar fabric herein described as “woven after the manner of hair-cloth, and consisting of thread interwoven with slender strips of either whalebone, willow, or other wood fibre,” although the said fabric is believed to be new; but I *claim* the application and use of the said fabric in the construction of hat bodies, when the same is cut from the web, united together and formed into hat bodies, substantially in the manner herein set forth and described.

I also claim the metallic ring or annular plate, made substantially as described, in combination with the “turn-over” around the “square,” for the purpose of preserving the proper circular form at the “square” when the fabric of which the “tip” is made is too light or thin to serve the purpose of such support.

No. 14,343.—JAMES W. BEEBE.—*Improvement in Manufacturing Hats*.—Patented March 4, 1856.

By giving the stiffness required to the body alone, instead of the entire hat, the covering as well as the body can be made very thin and light, and hence the whole hat will be much lighter than when the entire hat is stiffened as usual.

Claim.—Making hats with a stiffened body *a*, combined with a felt covering *b*, reduced to the required form by felting, and put over and attached thereto with hatter varnish, or other equivalent adhesive substance, substantially as set forth and for the purpose specified.

No. 14,394.—NANCY DAVY, executrix of EDWARD DAVY.—*Improvement in Machinery for Preparing Hemp and Flax*.—Patented March 11, 1856. Patented November 13, 1852, England.

The hemp stalks are fed in between the fluted rollers C by means of the endless apron *b*, and are operated upon during their passage between the rollers *c* by means of the slides *f f*, which move up and down and cause the woody part of the plant to be disengaged from the useful fibre. As the material passes from the rollers *c* to the rollers *m*, it is operated upon by a bar *r* provided with hackle points.

Claim.—The reciprocating plate or plates *f*, in combination with holding or retaining rollers *e*, for effecting the separation of the fibres of flax and hemp, substantially as herein described, and combined therewith.

I also claim the combination of the hackle bar, operated as described, with the rollers and reciprocating brakers or plates.

No. 16,279.—EDWARD W. LACY.—*Improvement in Hemp-Brakes.*—Patented December 23, 1856.

The driving-shaft *G* transmits motion to shaft *I* and cam *K*, which operates the lever *M* to lift the braker and braker-block *S* attached to the rock-shaft *D*. During the operation, the attendant shifts the adjustable weight *F* by means of a pedal to a point at which it will give to the stroke such a momentum as the quantity or quality of the stalks under the braker may require.

Claim.—The adjustable weight *F* to be used with or governed by a treadle-roller, or its equivalent, to regulate at pleasure the momentum of the blows upon the stalks, as described.

No. 15,166.—R. W. BOWEN.—*Improvement in Hemp-Brakes.*—Patented June 24, 1856.

The lower arm *B* of the braker is jointed to the upper one by connecting pieces *d d*, and turns around a pivot *e* in the smaller posts *C*. The upper arm has two blades; the lower one three blades. By means of connecting pieces *f f*, the lifting blades *D D* are firmly attached to the upper blades, and move uniformly with them, and come up clear to the top of the lower blades, when the breaker is opened.

Claim.—The peculiar construction of the upper and lower blades of the brake so that they shall approach each other at the same moment, but with different velocities, substantially in the manner described—that is to say, pivoting the lower blades at or near their front ends in a firm frame, and connecting their rear ends to the top blades, which are pivoted at a point about two-thirds of their length in a solid frame, and operated in front.

No. 15,495.—MERIWETHER THOMPSON.—*Improvement in Hemp-Brakes.* Patented August 5, 1856.

Motion being imparted to the machine by means of crank 19, and the hemp being placed upon the rails *G J K*, the swords *P* and braker *Q* are caused to work up and down by the arrangement of the conical pulleys *V* and *V¹*, crank 2, pitman 5 6, curved crank arm 7 8 9, and shaft *O*. The compensating pitman and crank connexion, consisting of buffer-block 3, spring 12, and elastic block 10 at one end, with a pin at the other end sliding in the curved slot of the crank-arm 7 8 9, afford the means of overcoming entirely the checking or retard action of the swords *P*, caused by an excess supply of material under

the brakera. The forked lever X serves to regulate the entire apparatus, as by it the velocity of the conical pulley V can be regulated by shifting the belt W, and also the cord 18 and end 6 of the pitman can be raised or lowered.

The inventor says: I do not claim a compensating pitman as such.

But I *claim* the arrangement of a compensating pitman when applied to a hemp-brake, and constructed substantially in the manner and for the purpose described.

I do not claim cone-pulleys for varying the speed of my machine, nor the slotted arm and shifting pitman to vary the stroke of the brake.

But I *claim* the arrangement described of the cone-pulleys, or equivalent mechanism for varying the speed, and the arrangement of the slotted arm 7 8 9 and shifting pitman, as described, in such relation to each other that, by the described connexion between them, through the shifting lever X and the cord 18, any change of speed shall effect a corresponding change in the stroke of the brake.

No. 16,285.—WILLIAM H. McNARY.—*Improvement in the Manufacture of Hosiery*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not confine myself to the use of any particular machinery to produce the results described.

I *claim* the production of the heels and toes of hosiery by knitting a spherical piece on the cylindrical or straight portions of the leg or foot, by the mode of operation described, whereby the same number of stitches is always left remaining on the needles, and the cylindrical or straight portion is enabled to be proceeded with again, when desired, thus enabling the whole leg and foot to be produced by a continuous operation of the devices or machinery employed.

No. 15,607.—WILLIAM GODDARD.—*Improvement in Manufacturing Seamless Hosiery*.—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The process or method of manufacturing seamless hosiery of the form required for what is known as seamless tubular knitted fabrics, such as are knitted on machines that knit the tubes of a uniform diameter, and adding thereto the ribbed top, the heel, and the toe, by hand knitting, or any equivalent therefor, as described.

No. 15,314.—JONAS B. AIKEN and WALTER AIKEN, assignors to HERICK AIKEN and JONAS B. AIKEN.—*Improvement in Knitting Machines*.—Patented July 8, 1856.

The needles are inserted into the grooves of the hollow conical needle-plate B so as to be flush with the sides; the conical driving-

plate F rests with its sides on the needles, and they are held between the sides of the two plates F and B; the object of the conical shape of the needle-plate B is, that needles of greater length can be used than in horizontal plates. The driving-plate F which operates the needles has two grooves *b* and *c* cut in its outer surface—the groove *b* for operating the needles, and the grooves *c* for the retreat of the same. The grooves *b* and *c* are represented in figs. 2 and 3; they operate the needles by means of their bent ends sliding in the grooves. When the needles are not required in operation, they are made to pass into the horizontal retreating groove *c*, by means of a needle-switch *g* (fig 3), which is pivoted to the handle *f*, and can be operated by it. The machine is set in motion by turning the driving plate F by means of the handle *f*, when the needles will operate as represented in the illustration.

Claim.—1st. The hollow circular needle-plate having grooves cut in its inner surface.

2d. We claim the horizontal groove *c* near the bottom of the cone, so arranged in relation to the inclined operating groove that the needles may be retreated thereto, as described, and retained therein when they are not wanted to operate on the fabric knit.

3d. We claim the switch *g*, arranged substantially as described, to change the needles from the inclined operating groove to the retreating groove.

No. 15,435.—JOHN NESMITH.—*Improvement in Knitting Machines.*—Patented July 29, 1856.

The nature of this invention consists in narrowing the knitting work by lowering one or more of the needles *a* at each passage of the yarn-carrier P, so that the yarn will continue to pass through only the remaining loops of the raised needles until the narrowest part of the fabric is made or arrived at, and then widening this fabric as the knitting progresses by raising the needles, one at a time, to an equal level with the other needles, so that the yarn may pass through their loops in common with those not lowered, and thus widen the fabric as much as the distance from needle to needle, when each of them is raised on the knitting line, so that the yarn will pass through their loops. The desired number of needles are lowered to allow the remaining ones only to knit, which constitutes the narrowing, by means of slides N⁶ and N², having a lower slot to carry the needles when lowered, and an upper slot or plane to carry the needles when raised, these slots being connected together by an angular slot; and the needles are caused to travel in these slots by moving along the slides, whenever it is desired, by means of a registering apparatus, consisting of the worm A², gear C³, shaft B⁴ and its cams K³ and K⁶, cam B² revolving between the levers H³ and H⁶, and thus imparting the vibrating motion to dogs H² and H⁷, which operate upon the governor G², turning the ratchet I⁶, which is secured to the shaft E² so as to turn it and pinion T³, which meshes into the rakes Y² and Y⁶, which latter move the slides N² and N⁶, the entire registering apparatus being driven by main shaft D.

Claim.—1st. The lowering or raising the ends of the needles which receive the threads, so that the threads will not enter the hooks of the needles when out of their working line, as the carrier passes them, while the other ends of the needles remain connected with the mechanical arrangement used for pushing them forward and drawing them back to form a stitch on their working lines, essentially in the manner and for the purposes set forth.

2d. I claim the slides N^2 , or their mechanical equivalents, for taking the needles out of the work for narrowing the fabric, and bringing them back into the work for widening the fabric, essentially as set forth.

3d. I claim the metallic rests or guards d , or their equivalents, for constantly keeping a number of the needles in their working line, essentially in the manner as fully set forth and described.

4th. I claim the connexion of a registering or measuring apparatus, constructed as described or otherwise formed, with the moving parts of my machine, for the purpose of bringing into use and taking out of use the requisite needles at the proper time of shaping the fabric, and for severing the threads when the work is done, and stopping the machine when required, essentially in the manner as set forth.

5th. I claim the arrangement and movement of the finned bar W , or its mechanical equivalent, to aid in forming the stitch, also its movement backwards to uncover the ends of the needles for putting on the new fabric, essentially in the manner and for the purposes set forth.

No. 15,484.—AUGUSTUS J. GOFFE and DEMUS GOFFE.—*Improvement in Knitting Machines.*—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventors say: We are aware that machines have been made which have a complete converging series of latch needles arranged in a circular plane to slide endwise and down the yarn from a yarn-carrier around stops arranged between the needles to take up enough yarn for the new loops; and we know that machines are in use which have a complete converging stationary series of fixed needles arranged in a plane; but our invention, as described, is not embraced by such machines.

We *claim* the employment of a stationary circular converging series of hooked needles a , arranged in a plane, and made to slide in respect to the revolving or travelling yarn-carrier E and presser D , and also in regard to the stationary ring of stops $c c$, as described, in connexion with the inside web guide C , or its equivalent, as set forth, for knitting plain tubular work.

No. 16,297.—CLARK TOMPKINS.—*Improvement in Knitting Machines.*—Patented December 23, 1856.

Motion being imparted to pinion r on shaft C , the disks E and F a rotated with shaft C , the draught roller A not being connected with sa

shaft. By operating screw-nut *d*, the disk *F* can be pressed against disk *D*¹, and the friction between the driving disks *E F* and the disks *D D*¹ on roller *A* can be regulated so that the driving disks shall just slip forward on the roller *A* when the web has the proper tension for knitting. After this first adjustment, the tension produced by the rollers *A B* on the web, as it is drawn by them directly from the needle cylinder, will continue the same, whether the yarn from the bobbins runs fine or coarse.

Claim.—The improvement of driving the rough roller *A* of the take-up mechanism of a rotary knitting machine, by means of rotary friction plates, or their equivalent, substantially as described, instead of giving a positive rotary motion to this roller, as heretofore, so that this draught roller, with its incumbent take-up roller *B*, without any additional mechanism or any re-adjustment, continually gives the same tension to the web, in knitting, however much the yarn varies in size, or whether much or little yarn is fed to the needles, or whatever quantity of web is on the take-up roller.

No. 15,006.—RUFUS ELLIS.—*Improvement in Needles for Knitting Machines.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Making the journals *c d* or connecting-rod of the hinge fast to the male or entering projection *b* thereof, in combination with so constructing the female socket *f g e* of the hinge as to enable the male part, or its journals, to be moved downwards and laterally in order to detach the same from the female part, and providing such female part with a spring stop *i*, or its equivalent, whereby, when the male and female parts of the hinge of two links are connected together, they may be prevented from accidental disengagement.

No. 14,975.—CLARK TOMPKINS and JOHN JOHNSON.—*Improvement in Rotary Knitting Machines.*—Patented May 27, 1856.

*D*¹ is a bent arm fastened to the guide frame *E*. *D* is a rod, attached at one end to the outer end of *D*¹, and at its other end to the shield *B*, which is hung on the shaft *S*. The take-up reel *F* is geared so as to wind up the web a little faster than is required; but as the tension roller *A* begins to rise, the shield *B* is so turned by its connexion with the tension roller as to lift the click *C* out of the ratchet, and thus prevent the further taking up of the web until the tension roller descends by the production of more web, so as to let the click *C* act on the ratchet again; the tension roller *A* can therefore only rise in the take-up frame *K* to a certain point; and by allowing the tension roller but a very short movement, it will continually produce an even tension on the web until the take-up reel is full.

The inventors say: We do not claim any arrangement of a tension rod or roller to give even tension to the slat or non-revolving circular

fabrics of knitting looms or machines at the same time such fabrics are produced and taken up, nor do we claim any mode of causing the tension rod or roller in such stationary machines to so govern the motion of the take-up beam that it shall take up the fabric as fast as produced; but we *claim* the combination of the tension roller A with the take-up mechanism, or its equivalent, when applied to rotary knitting machines.

No. 15,492.—SIDNEY W. PARK and EDGAR S. ELLS.—*Improvement in Rotary Knitting Machines*.—Patented August 5, 1856.

A detailed description of this invention would occupy too much space to be given here; the principal features are indicated by the claims and engravings.

Claim.—Combining two annular series of hooked needles with a sinker C, two pressers F and G, and a web guide D, or its equivalent, substantially as herein set forth, for use in the production of ribbed work, as specified.

2d. The manner of arranging two annular sets of needles in relation to each other: that is, arranging them together so that the hooked ends of the needles of one set are parallel or nearly so with, alongside of, and pointed in the opposite direction to those of the other series, as herein set forth.

3d. The improvement of arranging the sinker C, substantially as herein described, to increase the distance between the yarn and the loops of the second set of needles just before the barbs of these needles are pressed.

4th. The improvement of arranging the cam B so as to spring out the ends of the second set of needles, substantially as described for the purpose specified.

5th. The improvement of holding the needles of an annular series in place on the grooved needle block, or its equivalent, by a ring A, constructed, arranged, and operating as set forth.

No. 14,590.—ERASTUS B. BIGELOW.—*Improvement in Looms*.—Patented April 8, 1856.

A friction brake, for holding the warps firm at the beat of the lathe c, vibrates on the stud m; the shipper arm n forms the brake, and is made to conform to the flange l, while the arm o extends downwards, and is connected with the sword of the lathe by the rod p, so that when the lathe advances to the cloth it brings the brake arm n into action.

When the warps are used up so as to require more to be given out from the yarn beam, the tension roller f is drawn forward, and the projection b¹ raises the feeler z and allows the spring x to draw back the rod w so that when the lathe again falls back it turns the yarn beam. When more warps are being given out than are wanted, the arm z falls down and holds the lever v in a state of rest until it is released as before.

The belt cone d^1 is acted upon by the shipping lever g^1 , which presses the cone d^1 against the friction cone c^1 . Fig. 4 represents a cross section of these cones and a part of the shipping lever g^1 .

The shipper k^1 projects below the stud p^1 , and carries the cam r^1 , which acts, when the shipper is released, on the roller o^1 , and brings the brake into action.

When the loom is started again, the cam r^1 turns and liberates the roller o^1 , and allows the brake to free itself from the cone by its own gravity.

The friction brake may be released by means of the treadle u^1 , which forces the roller o^1 from under the cam r^1 and the projection w^1 , whilst the projection x^1 prevents the roller o^1 from rising above the line of the small part of the cam r^1 , so that the spring g^1 is sure to force the roller o^1 under the said cam for another operation.

Claim.—Connecting the tension roller f , or its equivalent, with the let-off motion, to regulate the delivery of the warps by the arm or feeler Z .

I also claim the devices for holding the tension roller, or its equivalent, firmly at the beat of the lathe c .

I also claim the mode of constructing the belt cone d^1 , and combining it with the shipping lever g^1 .

I also claim the mode of connecting the friction brake with the shipper and stop motions of the loom.

And, finally, I claim releasing the said friction brake to allow the loom to be turned by hand, substantially as specified.

No. 14,971.—ROBERT PILSON and STEPHEN P. HEATH.—*Improvement in Looms.*—Patented May 27, 1856.

By reference to fig. 1 the shuttle $R R$ is shown as passing into the shuttle-box K^1 , and in this movement the thread filling $S S S$ is being taken off the bobbin t ; and so long as the filling has the least tension upon it, the eye e of the balance drop is kept down nearly horizontal towards the bobbin, and thus the lower part or the toe f is kept from striking or tripping against the end a of the gravitating catch $a^1 a^2$, as the shuttle passes into the box K^1 ; and as the shuttle passes into the box it strikes the swell-spring m , which causes the rod $i i$ to turn outward, thereby admitting the horizontal finger q to pass below the breast beam of the loom and the frog lever, and thus, so long as the filling is not exhausted, the shuttle will slide over the gravitating catch $a a^1 a^2$; and as the momentum of the shuttle is not disturbed, the shuttle readily acts against the swell-springs $m m$, causing them to perform their required office. As soon as the filling runs out, the balance drops down, its toe part f striking the gravitating catch $a a^1 a^2$, when the momentum of the shuttle is checked, which prevents the shuttle from completely passing into the box K^1 , and which also counteracts the pressure of the shuttle against the swell-spring m , by which means no action is imparted to the stop-rod $i i$, whereby the horizontal finger q

instead of passing below the frog lever, strikes flush against the frog, whereby the band of the driving pulley is shifted.

Claim.—The combination of a balance catch in the shuttle in combination with the balance weight in the lathe acting from gravity also, for the purpose described.

No. 15,186.—LUCIUS J. KNOWLES.—*Improvement in Looms.*—Patented ne 24, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the combination of the vibrator P and the angular notch O with either of the levers or jacks G of the harnesses so as to operate in connexion with the lifter rod I, because I am aware that such has been the subject or a portion of the invention for which a patent was granted to B. F. Rice on the 18th day of October, 1853, my invention being in part an improvement thereon and subordinate thereto; nor do I claim for operating the vibrator the mode described in the patent of the said Rice, wherein the pattern chain is represented as having an intermittent rotary motion while at work, and made to move the vibrator by the alternate actions of pins and hooks in a cam groove formed at the upper part of the vibrator, or in an arm projecting above its fulcrum; my improvement enabling the spring-arm not only to perform all the functions necessary to move the vibrator, but an additional one viz: that of allowing the toothed cylinder M to be continually revolved—important advantages both in the construction and operation being gained thereby.

What I therefore *claim* is, the application of the spring R to the jack G, the vibrator P, and the tooth-cylinder M, substantially in manner and under their arrangement as described, in order to enable the cylinder M not only to effect the movements of the vibrator by the aid of its spring, but to be continuously rotated or maintained in constant and not intermittent rotary motion.

I also claim combining the double shuttle or drop-box C with one of the levers or jacks G, (operated as described,) by means substantially as herein before explained, viz: the rod S, the elevator U, the friction roller T, and slide-bar V, so that such drop-box may be operated by the toothed cylinder of the harness levers or jacks.

No. 15,295.—WILLIAM J. HORTSMANN.—*Improvement in Looms.*—Patented July 8, 1856.

This invention relates to a novel mode of applying and operating the pile wires in looms for weaving piled fabrics.

The operation for inserting and withdrawing the wires is performed in the following manner: During the opening of the shed, one or the other of the bars B B¹ is acted upon by the mechanism connected with the cords H H¹, and moved in such a direction as to draw its respective rod E or E¹ away from the other rod far enough for its respect-

ive wire to clear the selvage threads of the warp, as is illustrated by the position of the rod E and wire D, shown in dotted lines, in figure 2. The wire D, before this operation, has been confined in the web, immediately in front of the position now occupied by D¹, by the shed having crossed over it; but being now liberated, it is quickly thrown backwards by the action of the spring *b* on its rod, till the shoulder *a* strikes the front guide *g*. Immediately after the rod has been driven back by the spring, the bar B is liberated by its treadle ceasing to draw on its cord H, and left free to be acted upon by the spring G, which pulls in the direction indicated by the arrow marked upon it, and thus carries the wire D into the now open shed. In this position it is shown in full lines, in figure 2. The advance of the lay causes the reed to drive back the wire D and its rod E; and after the shed has crossed over it, the other wire D¹, which, during the above described operation of D, has been in the web, is drawn out by the movement of the bar B¹, produced by the traction of cord H¹. The wire D¹ now goes through the same operation as that just described of the wire D; and after it has been carried forward by the reed, and had the shed crossed over it, the wire D is withdrawn, and its operation repeated. The object of the spring latches I I is to retain the bars E E and wires D D¹; after having been driven forward, they serve to relieve the tufts or pile threads of the tension produced by the springs *b b*, and also retain the wires in proper position at the commencement of the web. The rods E E are drawn away from the latches I I, and liberated almost as soon as their respective bars B B¹ commence their movement to withdraw the wires.

Claim.—The permanent attachment of the pile wires by one end to the independent sliding rods, which are carried each on one side of the warp, and controlled by springs in such a manner as to allow them an independent movement longitudinally to the warp by transversely sliding bars B B; the said rods, bars, and springs being operated and operating in combination with each other.

And I also claim the spring latches H, acting in combination with the rods E E¹ of the pile wires.

No. 16,015.—LUCIUS J. KNOWLES.—*Improvement in Looms.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings,

The inventor says: I do not claim a single picker, operating in connexion with a movable series of shuttle boxes, and so as to pass from one box into another of the series, as occasion may require; but what I claim is a combination of a single picker staff D, pickers C, and boxes *a*, substantially as described, wherein there is a separate picker C for each box of the series, and all such pickers are successively moved towards and operated by such single picker staff D during the operation of weaving with the shuttles of such series of boxes.

I would remark, that I by no means claim making a bar with a bend

or recess, as I am well aware that such, without any reference to a special use of said bend or recess, is no new invention.

But I *claim* the improvement in the picker staff when applied to operate a series of pickers, arranged in a set of shuttle-boxes, as described; the improvement consisting in the bend or recess G, applied to the picker staff, so as to enable it while operating a picker to pass by another picker under the former, and not move the said other picker in its box, the whole being substantially as specified.

And I also claim making the picker staff with a bend or recess *g*, or its equivalent, so as to enable it while operating a picker to pass by another picker, and not move the same in its box, the whole being substantially as specified.

No. 16,306.—BENJAMIN G. DAWLEY, assignor to Z. ALLEN.—*Improvement in Looms*.—Patented December 23, 1856.

By means of the intermediate wheel D, sustained by disk F, the two yarn beams A B are so connected together that the resistance of friction applied to plate F is distributed equally to the threads of the warp yarn wound on each of them, whereby both of the combined sections of the warp yarn are let off evenly to produce uniform selvages of the fabric, although there may be a difference in the circumference of the beams.

Claim.—The use of an intermediate wheel D, or wheels, to balance and regulate the tension in the delivery of the warp from two or more yarn beams combined together to form one web of wide cloth, substantially as described.

No. 16,271.—ANDREW L. FULLER.—*Improvement in Looms*.—Patented December 23, 1856.

This improvement relates to the manufacture of that class of fabrics in which two thicknesses are woven at once for a part of their length, then changing to a single thickness. The loom, in weaving the single part, is arranged to feed about twenty picks to the inch, with the lever C at full play; and when it is wished to change to double, lifting the fingers P by the guard R, the slide N is moved to the double pattern. This shifts the feed to a finer one of about fifty picks to the inch; and when the proper length is woven, the pattern and slide are changed back again to single work.

The inventor says: I do not claim controlling the feed or take-up motion of a loom, as has heretofore been done, but only in connexion with the devices and arrangement described.

1st. I *claim* regulating or changing the feed, by governing the action of the lever C, by means of the graduating stop F, or its equivalent, in connexion with the change of slide and pattern, in the manner and for the purpose set forth and described, or any other substantially the same.

2d. The guard R, for lifting the fingers, when constructed and operating in the manner and for the purposes described.

3d. The flexible connexion between the stop F and the rod or slide, to give motion to the stop without moving the slide, as described.

No. 14,746.—SAMUEL T. THOMAS.—*Improvement in Looms for Weaving Bags*.—Patented April 22, 1856.

When the cam b^1 of the endless belt P is moved into contact with the stud a^1 of the lever o , it will move said lever so as to produce the elevation of the tripping-lever x , and to such an extent as to carry its cam w into the path of the cam v of the slide t . The slide t of the rotating cam K will thus be moved so as to throw the switch r across the groove o , whereby the stud n of the tri-armed lever I of cam K is turned from the groove o into the sideling groove p . While the stud of the tri-armed lever is passing from the sideling p into the groove o , the switch q extends across the groove o , so as to prevent the stud from being turned out of its proper course. As soon as the cam b^1 has passed beyond the stud a^1 , the lever x will move by its own weight, so as to move the slide t back again, when the cam K moves the cam v into contact with the cam w . Thus, the switch r will be moved across the groove p , so as to cause the stud n to travel in the groove o . The stand S is jointed to two upright arms $f f$, extending from a rocker-shaft T, which latter is vibrated by means of an arm g^1 resting upon a cam h^1 on the main driving-shaft B.

Claim.—In combination with the compound cam K, the endless chain or belt P, and the mechanism for moving the switch r ; the whole being arranged as above described, and for the purpose of determining the length of the sides, or when to form the bottom of the bags.

I also claim the arrangement by which a uniform tension of the warps is secured during the movements of the harnesses; or, in other words, I claim combining with the breast-roller or beam mechanism, by which the breast-roller or beam may be moved, with respect to the lay or harnesses, and during the movements of the latter, as specified.

No. 15,291.—JOHN GOULDING.—*Improvement in Jacquard Looms*—Patented July 8, 1856.

A detailed description of this invention would take up too much space to be given here.

Claim.—1st. The combination and arrangement of the mechanism described for operating the suspension and trap-boards in jacquard looms—that is to say, lever 81, sector 15, on shaft E, pulley 16, on shaft F, connected by a chain or belt having slots P and 12, suspension and trap-board 10 and 11, connected to the lifting rods by arms 51.

I claim the lever 89, (fig. 1,) or its equivalent, operated by the tappets 88, or their equivalents, so arranged as to lock the beams or straight and ground warps, as described.

I claim the mode of giving tension to the warp-threads or yarn taken

from bobbins, as shown in figure 2, by drawing it against itself or the bobbin or yarn which remains upon it, by means of a weight or its equivalent, but so arranged as to be lifted by the yarn when it is drawn, and release the bobbin, and allow it to turn until the yarn delivered permits the weight to descend again, and stop the bobbin by the friction of the weighted yarn against it.

I claim the traversing board 167, (fig. 3,) or its equivalent, arranged upon the knot cords, pile, or figuring harness below the warps, substantially as described, to bring down any single cord which may catch accidentally so as not to be brought down by its own weight.

I claim holding the parting wires 44, (figs. 1 and 3,) hanging them to a rod in rear of the heddles, and passing them between the upper and lower loops of the heddles.

I claim the trap-boards (fig. 4) pierced in the manner described, combined with the needles, constructed as described.

I claim the thimble or socket 120, (fig. 5,) or its equivalent, for receiving, stopping, and holding the shuttle in the box.

I claim the apparatus for holding and drawing up the filling or binding weft for the purpose of tightening the selvage, substantially as herein described, and represented in fig. 6.

I claim the arm 100, and score 121, (fig. 6,) constructed, arranged, and operated substantially as described, or their equivalents, to carry the weft thread from the fell at the edge of the cloth, nearly to where the pile warp crosses or makes an angle with the shed.

I am aware that a knife revolving on an endless belt has been used; I therefore do not claim this feature.

But I claim the application of the knife 175, in combination with its guides.

No. 15,717.—JAMES C. COOKE, assignor to THE HOTCHKISS AND MERRIMAN MANUFACTURING COMPANY.—*Improvement in Jacquard Looms.*—Patented September 9, 1856.

When the front cross-bar E is elevated, it will carry up such of the lifting-bars as have the hooks *b* in the position shown in fig. 2, and at *b'* shown in fig. 3, and will also carry up the side pieces which contain the diagonal slots C and D, which, by means of the connecting-rods *g*, will give a horizontal motion to the cylinder A, and, by means of the dog G, will give the cylinder an intermittent rotary motion, and by the operation of the dog H, cam K, and tracer L, will, at suitable times, give a vertical motion; all of which motions change the pattern as desired, by bringing different portions of the cylinder A to the needles *d*.

Claim.—The combination of the lifting-bar with the sliding-hook and rocking-piece for operating the needle.

2d. The use of a pattern cylinder having a reciprocating horizontal and vertical movement, combined with the movement of rotation on its axis, in the manner and for the purpose set forth.

No. 14,237.—ELIJAH HALL.—*Improvement in Power Looms.*—Patented February 12, 1856.

The nature of this improvement will be understood from an inspection of the engravings.

Figure 2 represents only one-half of a front view of the loom, the other half being similar to it.

Claim—Locking and unlocking the reed by means of sliding bolts $g\ g$, applied to the back of the lay, behind the reed, and operated by connexions with the connecting rods $B\ B$, by which the lay is driven, substantially as herein described.

No. 14,222.—ERASTUS B. DIGELOW.—*Improvement in Power Looms.*—Patented February 12, 1856.

When more warps are being taken up by the formation of the cloth than are being given out, the tension roller f will be thereby depressed, which through the medium of the regulating rod l will raise the pawl or feeler g^1 , and allow the lever c^1 (provided with catches or steps $f^1\ f^1$) an increased range of motion; then when more warps are being given out than are required, the said tension roller f rises and allows the pawl or feeler g^1 by engaging with some one of the lower catches $f^1\ f^1$, to diminish the range of motion of the said lever c^1 , thus adapting the delivery of the warps to the actual requirements in forming the cloth. In order that the feeler g^1 may properly engage with the catches $f^1\ f^1$, to regulate the delivery of the warps as aforesaid, the cam v is so formed as to cause the lever c^1 to act to turn the let-off motion, (consisting of the let-off shaft w and worm wheel z gearing into cog wheel a^1 upon yarn beam c), when the shed of the warps is open and the tension roller consequently at rest. The end of brake lever r and the projection s on the framing form together a sort of vise to gripe and hold the regulating rod l whenever the brake lever is brought into action.

Claim.—The combination of the tension roller f , the regulating rod l , and the brake or holding lever r , when co-operating substantially in the manner and for the purpose specified.

Also, regulating the action of the delivery motion by the combined action of the tension roller f or its equivalent. The regulating rod l , the pawl or feeler g^1 , and the series of catches or stops $f^1\ f^1$, substantially as specified.

Also, the method of holding the tension roller, (or its equivalent,) whereby the regulating rod l (or its equivalent) is griped, substantially as specified.

And, finally, the mode of constructing the brake or holding lever r , and combining it with the cam v , whereby the said holding lever r is made to do the double duty of turning the let-off motion shaft and holding the tension roller, (or its equivalent,) substantially in the manner and for the several purposes above set forth, and whereby, also, the apparatus which regulates the delivery motion is made to act thereon, when the shed is open and the tension roller at rest, substantially as specified.

No. 14,285.—JOHN JOHNSON.—*Improvement in Power Looms.*—Patented February 19, 1856.

The improvement for shedding the warp consists in elevating the pile warp above the ground or backing warp, so as to form two separate and distinct sheds at the same time, one above the other, as seen in fig. 2. This enables the wires to be put in above the ground warp, under the upper shed, while the shuttle is thrown through the lower shed, and thus obviate the necessity of missing a pick for the purpose of inserting the wire, as heretofore required. To effect this, the harness containing the pile warp is made to rise higher than the ground warp, having a double elevation, so as to leave sufficient space to pass the wire through. The shuttle and wire then pass through their separate sheds at the same instant, without interference with each other or stoppage of the shuttle.

The wires *f* are attached to endless bands *a*, which bands receive a reciprocating movement at proper intervals, for the purpose of advancing and withdrawing the wires at the proper time. The motions of the belts are such that one wire will be inserted when the other is withdrawn. The two wires are inserted alternately from either side of the work, as will be seen from the engravings.

The inventor says: I do not claim a double shed; but what I do claim as my invention is first inserting the wires at the same instant the shuttle is thrown, by which I save a pick by the employment thereof of a double shed in the manner set forth.

I also claim the vibrating belt, or its equivalent, to which the wires are connected, arranged and combined substantially as herein set forth.

No. 14,358.—JAMES GREENHALGH, Sr.—*Improvement in Power Looms.*—Patented March 4, 1856.

A detailed description of this machine would take up too much space to be given here.

Claim.—1st. In combination with the method of balancing the boxes, the method of giving motion to the shaft *f* to operate the boxes, by means of two notched bars *j j'*, which are geared with opposite sides of the pinion *e* on the said shaft, and are suspended from levers *l l'*, which are operated upon by a pattern cylinder in such a manner as to raise either of the said bars as may be necessary to bring its teeth into engagement with a dog *i*, or *i'*, suitably arranged and operated to give the requisite motion to the bar.

2d. The method of giving the shuttle-boxes a single or double movement, as may be required by the pattern, by employing two hooks, *i i'*, or their equivalents, having unequal movements; arranging the said hooks, or their equivalents, with their points at different elevations, and employing long and short studs in the pattern cylinder, or its equivalent, to raise the rack bars *j j'*, which give motion to the boxes, to a position to be caught only by the hook having the shorter movement, or to a position to be caught by the hook having the longer movement, substantially as herein described.

3d. Controlling the order of succession of the movements of the two pickers to make them act in regular alternate succession or otherwise, as may be desirable, by means of a pattern cylinder, or its equivalent, acting upon the mechanism by which movement is transmitted from the driving-shaft to the pickers in such a manner as to throw or retain either picker in gear with the said shaft, and the other one out of gear, substantially as herein described.

4th. The combination of the levers J J¹ through which the cams on the driving-shaft operate the pickers with the sliding-shaft K, the lever 9, and the V-shaped stud 7; the said lever 9 being moved from side to side by the pattern cylinder, and the said V-shaped stud receiving a suitable motion to operate on the said lever 9, substantially as herein described.

No. 14,644.—ANDREW ALLEN.—*Improvement in Power Looms.*—Patented April 15, 1856.

The wrist *k* gives the rod F, with its pin *h*, a movement forth and back during every revolution of the treading-shaft H, causing the pin *h* to advance into and retreat from one of the spaces *h*¹ *h*² *h*³ *h*⁴ between the fingers of the hand E, and by that means either to raise or lower or leave stationary the lifting-rod C, according to space which the pin enters, and to the previous position of the lever D.

Claim.—The combination of the fork *c c*¹ on the lifting-lever D, the stationary hand E, and the sliding-pin *h*, or its equivalent, the whole operating substantially as herein described.

No. 16,037.—ALEXANDER SMITH and HALCYON SKINNER.—*Improvement in Power Looms.*—Patented November 4, 1856.

A detailed description of this invention would take up too much space to be given here.

Claim.—1st. Mounting the yarns for forming the ranges of tufts in parcels on a series of spools, or equivalents therefor, in the order required for producing the design or pattern required, so that each spool, or the equivalent therefor, may be brought in succession to the required position for each range, substantially as described.

2d. The mode of operation, substantially as described, by which the spool frame required at each operation is brought down in close proximity with the tufting warps, and then carried out of the way of the lay when performing its operation, as described.

3d. The mode of operation by which the tufts of yarn are introduced and applied to the tufting warps, substantially as described.

4th. The mode of operation by which the tufts are cut off from the yarns after they have been introduced and applied to the warps, substantially as described.

5th. The mode of operation by which the tufts are carried to the required place in the fabric by the combined action of the reed and plate, or any equivalent therefor, as described.

6th. And in combination with the several modes of operation by which the tufts are introduced, the employment of the heddle motion, substantially as described, for binding and holding the said tufts by the warp threads.

No. 14,292.—RENSSELAER REYNOLDS.—*Improvement in Temples for Looms.*—Patented February 19, 1856.

When the lay beats up, the stud *s* strikes against the downward projection *e*, and drives the temple forward with it from position 2 into position 3. This is a very little way, just enough to make the forward end *f* of the arm D run under the roller B, to open the jaws sufficiently to release the cloth. When the lay recedes, the temple follows it, (the receding motion of the latter being caused by the tendency of the spring E to raise up the arm D, the pressure of the arm under the roller tending to throw it out,) and the rear jaws *h* close upon the cloth.

Claim.—The arrangement and gear, substantially as herein shown and described, of the shank D of the opening and closing jaw with the stop or roller B, in combination with the closing and receding spring E, for the operation together essentially as specified.

No. 14,988.—WILLIAM W. WIER and WILLIAM GROVER.—*Improvement in Self-Acting Mules.*—Patented May 27, 1856.

As the spindles commence to revolve and the carriage to move out, the third faller C is drawn up by the yarn, when the points of the cam E, formed by the meeting of the concentric and eccentric parts, pass the centres of the rolls *i i*, and they being drawn against the cam by the spring S, the cam and parts attached to shaft C are immediately thrown into their proper position. As the carriage continues to move outward the latch *f* is brought in contact with the stand *g*, depressing the latch and lever H until the latch will pass under the stand, and bringing down the counter-faller to the proper position for it, while the carriage is running out. When the carriage is out and the spindles have backed off, the front faller is put down to wind the yarn on the spindles as the carriage runs in; and by the action of the cam W, against the pin in the arm *x*, C is also put down and remains on the yarn until the carriage returns to the position shown in the drawings. The counter-faller is controlled by the yarn until the carriage is nearly in, at which time the latch, being elevated, is brought in contact with the stand *g*, depressing the latch and bringing the stand and lever G in contact, whereby the lever is held down so as to just clear the cam F when the front faller rises, but allowing lever H and counter-faller to rise sufficient to bring the faller-wire level with the tops of the spindles. As soon as the carriage starts out, the lever is released from the stand *g*, and is then held down by the cam F.

Claim.—The application to mules of the faller C, herein denominated a third faller, operated by the mechanism herein described, or the

equivalent thereof, when used in combination with a faller and counter-faller, substantially as described and for the purpose specified. Also, the combination and arrangement of the levers G and H and latch *f*, substantially as described and for the purpose specified.

No. 15,245 —JOHN McMULLEN.—*Improvement in Netting Machines.*—Patented July 1, 1856.

The nature of this invention consists in conveying the net as it comes from the machine between and partially around two pressure rollers R R¹, and in effecting the tightening between those rollers and the cloth beam B. The invention further consists in so connecting a lever-bar *d*, under which the net passes on leaving the machine, with the pawl *p* driving the cloth beam B, that the tightening of the net between the machine and the lever-bar, beyond the slackness requisite for the formation of the knots, will stop the rotation of the cloth beam.

Claim.—Finishing the meshes of the net and tightening the knots by the simultaneous longitudinal and lateral strain of pressure rollers and cloth beam, operating as specified, the relative position of said rollers and beam being automatically preserved.

No. 15,738.—HERVEY LAW.—*Machine for Cutting Paper.*—Patented September 16, 1856.

A block of paper being placed upon the platform C, and motion being communicated to the shaft of the knife B, said motion is transmitted to the mechanism by the band J. As the platform C rises by the action of the eccentrics D D¹, the upper lever F¹ of the toggles is carried up and made by the cranks to assume a vertical position; and, in doing so, exerts an upward pressure on the platform C, and, by means of the lower lever F, a downward pressure on the clamping-frame E, which allows the platform C to rise sufficiently to clamp the paper between itself and the upper cross piece *c* of the clamping-frame. As soon as the toggles assume a vertical motion, the clamping-frame E commences to rise with the platform C, and the paper is fed to the knife B. The toggles are caused to exert a pressure between the lower cross-bar *d* and the platform, during the feeding and cutting operation, by the pintles *j* of the cranks G being confined and moving up in the straight portion of the grooves *k*.

Claim.—The combination of the rising and falling platform C and clamping-frame E, by means of toggles F F¹, said toggles having cranks G G¹ connected with them, the pintles of which work in curved grooves, or are otherwise actuated, substantially as and for the purposes set forth.

No. 14,804.—WILLIAM CLARKE.—*Improvement in Processes for Making Paper from Straw.*—Patented May 6, 1856.

The inventor says: I have found by experiment that coal-tar will neutralize the lime used, which heretofore has been of great in-

jury to moulds and felts used in the manufacture of paper. The coal-tar prepares the material to be made into paper to receive colors such as may be desired, which it has heretofore been found impossible to do in consequence of the alkalis remaining in the material.

He says further: What I claim is not the use of lime, or other alkalis used in the preparation of vegetable material used in the manufacture of paper.

But I *claim* the boiling of coal-tar in with the straw, or other vegetable material for the manufacture of paper, in the manner and form herein set forth, and for other similar purposes, or purposes substantially the same.

No. 14,621.—P. H. WAIT.—*Improvement in the Felt-Guide of Paper Machines*.—Patented April 8, 1856.

As the felt deviates from its course in the centre of the cylinder, its edges bear against the guide rolls F F, causing the connecting rod G to move together with the levers E E, and displacing the roll D, as shown by dotted lines, which works the felt back to its proper position.

The inventor says: I do not claim the roll D nor the use of a roll to guide the felt, for this has been previously used in various ways.

But I *claim* the employment and use of two crooked levers E E, hung upon pivots L L, and operated by connecting rod G and guide-pins or friction-rollers F F, against which the felt bears, working the rod G and levers E E, changing the position of the roll D, by action of the felt, substantially as here shown for the purpose set forth.

No. 15,582.—ISRAEL KINSEY.—*Improvement in Feeding Pulp to Paper-Making Machines*.—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Regulating the flow of pulp for making paper upon the web or cylinder of the paper machine by the pressure of the pulp in a box A, receiving its supply of pulp from the stuff chest E, through the aperture *f* in the trunk R, and discharging it through an adjustable aperture *p* below the surface of the pulp in the box A, the pressure being regulated and kept uniform by the height of the pulp *h* in the box A, which is adjusted and maintained by means of a valve *e* fitting the aperture *f*, operated by a float B, substantially as described, the combination of the several parts forming a self-acting regulator, for the purpose of making paper of equal thickness.

No. 16,278.—JOSEPH KINGSLAND, Jr.—*Improvement in Paper Pulp Engine*.—Patented December 23, 1856.

The stuff is fed into the cylinder C through the pipe F, and when reduced to pulp by the action of disk E on the end of the cylinder, it is discharged through pipe G, and the level of the nozzle of this pipe can

be adjusted relative to the head of water on the feed pipe F, whereby the effective head of pressure is varied and the velocity of the feed current adjusted.

Claim.—The method of regulating the feeding of the fibre to the grinder by varying the hydraulic pressure by means of an adjustable discharging nozzle or its equivalent, as set forth.

No. 16,239.—JOSEPH KINGSLAND, Jr.—*Improvement in Machinery for Grinding Paper Pulp.*—Patented December 16, 1856.

Rotary motion being communicated to the shaft D, the mixed half stuff and water may be let into the feed-pipe F from a tank above, and the hydraulic pressure will force it into the cylinder C through the space *e* between the disk E and the outer head *d*, round the periphery of disk E and through the space *f* to the orifice of the discharge pipe G, where it will leave the cylinder passing through said discharge pipe into a suitable receptacle.

Claim.—The combination of the revolving grinding disk, having play in the direction of its axis, with the fixed grinding disks on either side of it, whereby the revolving disk is free to adjust itself at such varying relative distances from the fixed disks as may be required to prevent the girder from clogging, and to adapt it to working properly upon different qualities of fibre, and under different rates of feeding, substantially as set forth.

Also, the arrangement of the feeding and discharging orifices of the grinder and its grinding surfaces, as described, so that the motion of the revolving disk will facilitate the entrance of the fibre into the grinder, tend to retard its discharge therefrom until properly reduced, and to keep it while in at those places where the grinding action is most energetic, substantially as set forth.

No. 16,316.—JOSEPH KINGSLAND, Jr.—*Improvement in the Process of Grinding Paper Pulp.*—Patented December 23, 1856.

Motion being imparted to the driving-shaft D, the half stuff is fed into the cylinder *c* through pipe F from a tank above, and operated upon by the grinding disk E, which reduces it to pulp. The centrifugal motion of disk E will co-operate with the hydraulic pressure under which the pulp is fed to cylinder C, to force said pulp through the grinding cylinder and out through discharge-pipe G.

Claim.—The process of reducing fibrous matter in water to pulp, by grinding it under hydraulic pressure, which creates a current that feeds the fibre into the grinder, and removes it therefrom as fast as it is sufficiently reduced, and renders the feeding independent of the grinding, substantially as set forth.

No. 14,218.—WILLIAM ADAMSON.—*Improvement in Machinery for Cutting Sand Paper.*—Patented February 12, 1856. Antedated August 12, 1855.

The paper P is slit as it passes between the slitting rollers A and B, the effect being similar to the action of a pair of shears. As the grit in the paper wears the edges of the rollers away, they are pressed against other by means of spring S, and thus the edges always wear themselves smooth and square.

Claim.—The arrangement and combination of the slitting drums A and B in the manner and for the purposes as herein set forth.

No. 16,162.—VESPASIAN O. BALCOM and CHARLES H. HILL.—*Improvement in Engines for Grinding Paper-Stock.*—Patented December 2, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The revolving pulp-tub E, or its mechanical equivalent, in combination with the grooved grinding roller G revolved thereon, at a greater or different speed than this tub.

Also, the combination of the revolving pulp-tub E and friction or evening roller J, arranged and operated essentially in the manner and for the purpose set forth.

No. 14,165.—JOSEPH N. PITTS.—*Improvement in Machines for Cutting Flocks and Paper-Stock.*—Patented January 29, 1856.

The material to be cut is placed within the drum B. The cylinders F are rotated rapidly by pulleys and belts, and drum B is rotated slowly. The material passes down between the two cylinders F F, and between the knives *f* on said cylinders and the cutters I I, and is cut by them. The material is fed to the cylinders F F by the rotation of the drum, the knives catching the material and drawing it downward, so that it passes between the knives and cutters. The cutters I are made yielding by means of springs *i*, and can be adjusted by means of nuts *j*.

Claim.—The combination of the cylinders F F, provided with spiral knives *f*, cutters I I attached to the adjustable and elastic or yielding bars G G, and the drum B; the above parts being arranged as shown, for the purpose specified.

No. 14,938.—WILLIAM R. DUTCHER, assignor to HARVEY CHURCH.—*Improvement in Machinery for making Rope and Cordage.*—Patented May 20, 1856.

The inventor says: I do not claim the wheels 7 and 8, and other gearing for giving a larger or smaller amount of twist to the strands, as

this is the subject of a patent granted to Messrs. Harris, Stott, & Richmond, October 31, 1854; neither do I claim rubbing down or sizing the yarn.

I do not claim regulating the tension of warps or strands by means of a wire or cord in a grooved disc, neither do I claim a belt or strap running around bobbins, as they stand in a circular range, for the purpose of rotating such bobbins; neither do I claim a revolving tube passing the strands, nor a plate or lay-up block through which the strands pass; but I am not aware that a pipe has ever before been fitted above each lay-up block in such a manner as to regulate the tension of the yarn by adjusting said pipe nearer to or further from the said lay-up block. I do not claim the grooved cone *t*, as this has been used in rope-walks and machinery; also a tube has been used in connexion with such cone, therefore I do not claim the same, but limit my claim as hereafter specified to the peculiar construction of the parts.

I do not claim leading the yarn or sliver off to one side of the enclosing can; but where bobbins are made use of, there must be sufficient distance between the bobbin and the hole through which the yarn passes to allow said yarn to pass off freely. Hence in cases where the yarn is led towards the centre of the circular range of bobbins, that range has to be so large, to provide for the above requirements, that the machines become heavy and cumbersome; therefore I lead off the yarns towards the opposite side of the range to where the bobbin stands, which provides sufficient distance to cause the yarn to run off with a uniform tension from the top and bottom of the bobbins, and thereby said bobbins can be brought into less space. The holes in the arms thus do not become regulators of the tension by their size, but provide for the yarn being drawn off in such a manner as not to be varied in its tension by any varying angle of the yarn in passing off the bobbins.

But I *claim*, 1st. The arrangement of the gear wheels *h* and *i*, pinions *B* and 14, plate *k*, and ring 12, (figure 3,) for sustaining and revolving the creel shafts *l*.

2d. I claim the adjustable friction wire or cord passing around in the disks 16 of the circular ranges of bobbins, thereby simultaneously regulating all the yarns in each range to precisely the same tension (figure 4).

3d. I claim the adjustable tube 18, over the centre of the lay-up block *g*, for the purpose of regulating by its proximity to said lay-up block the tension of the various yarns composing the strands, (figure 5).

4th. The construction of the lay-up cap *S*, on the end of shaft *c*, fitted to receive the moveable cone *t* and adjustable tube 24, so that the tube and cone can be conveniently changed to adapt the parts to laying up different sized rope or cordage (figure 6).

5th. Leading the yarn off from the bobbins to a hole or guide on the arms 43, or their equivalents on the opposite side, or nearly so, of the circular ranges of bobbins in the creel (figure 7).

No. 14,194.—OLIVER S. HAZARD and ISAAC PECK.—*Improvement in Machinery for Making Rope.*—Patented February 5, 1856.

A difficulty in rope-making always occurs in piecing up the strands from time to time as the cans are exhausted, or whenever the sliver breaks; for, before such occurrence can be seen, the end will have passed up above the rollers. Then the splicing must be done above the rollers, and then the strand, being loose, must be tightened by being drawn down to bring the strands even. But the sliver has no strength below the rollers, and cannot be drawn back through the guide. To avoid this difficulty, the inventor applies the trumpet-shaped guide Z, which compresses the sliver, and is suspended on the sliver, extending up through the tubular shaft close to the rollers; and when the strand is to be tightened he allows the trumpet to drop back by opening the rollers, and when the machine is again put in motion the rollers draw the trumpet again up to its place.

Claim.—The movable self-adjusting trumpet guide Z, as above described.

No. 15,326.—THOMAS G. BOONE.—*Improvement in Rope Machines.*—Patented July 15, 1856.

The strands from the several spindles H, H¹, H², having been led through the conducting tubes O, O¹, O², over the laying block and through the hollow upper journal *d* of the laying spindle or rotating frame to the capstans W, rotary motion is imparted to the drum C and capstan W. The laying of the rope is performed by the revolution of the conducting tubes O, O¹, O², around the axis of the laying spindle. The revolution of the strands to produce the lay of the rope being effected between the unlaied ends and the laid portions, while those parts are stationary, involves the necessity of the strands receiving each a separate rotary motion in a direction contrary to the lay, as imparted by the rotation of the tubes O, O¹, O², on their own axes; otherwise, the parts of the strands between which the revolution to perform the lay takes place and the unlaied ends would receive an additional twist, and the parts above between that and the laid portions would receive a diminution of twist.

Claim.—1st. The arrangement of the strand spindles with their axes all in the same line with each other, and with the axis of the laying spindle, substantially as herein described, or in an equivalent manner, whereby I am enabled to put in a forehand, equal in turn to that of the lay, without rotating the strand spindles.

2d. The arrangement of gearing, whereby, during the rotation of the laying spindle, the strand spindles may be kept stationary, or have a slight rotary motion imparted to them, either in the same or in a contrary direction with the laying spindle, consisting of the stationary gear 1, the shafts L, L, L, with their gears M, M, M, and N, N, N, and the gears J, J, J, and K, K, on the strand spindles, all operating substantially as herein described.

3d. The conducting tubes O, O, O, furnished with rollers *i, i, i*, or

their equivalents, revolving around the axis of the laying-spindle and spool spindles, and rotating at the same time on their own axes, operating in continuation with the above described arrangement of strand spindles, to take out the first additional twist received by the strand, and carry it forward to produce a forehard in the rope.

No. 15,623.—SIMON F. STANTON, assignor to J. M. and S. F. STANTON.—*Improvement in Machinery for Filling Seine Needles*.—Patented August 26, 1856.

Motion being imparted to the apparatus from the shaft M, a vibrating motion is given to the toothed sector F, cogged wheel E, arm D, and needle H. The cams *a* and *b* in the pulleys N and O impart to the shaft T and arm U a vibrating motion at the same time that the cam Y imparts to the arm U a vertical vibrating motion which corresponds to the vibrating motion of the needle H. By means of this arrangement the end V of the arm U, which carries the twine, is carried across the point *d* of the needle so as to carry the twine around said point *d* while the end V is in the needle; and as the arm U and needle H vibrate in opposite directions in the same time, the twine is carried alternately across the score *f* of the needle and around the spindle *d*, first in one direction and then in the other, so as to fill the needle with twine as the machine is operated.

Claim.—Giving the needles a vibrating motion by devices such as described, or their equivalents, in combination with the arms which deliver the twine, vibrated perpendicularly and traversed horizontally by devices such as described, or their equivalents, so as to deliver the twine across the score and around the tongue of the needle, substantially as described.

No. 14,283.—SETH P. CHAPIN.—*Improvement in Sewing Guides*.—Patented February 19, 1856.

The cloth (represented by slightly waved lines) is drawn along between the overlapping projection *g* of plate A¹ and the part of plate A projecting under said overlapping portion of plate A¹; and then it passes between the overlapping projection *g* of plate A and that part of plate A¹ which lies under said overlapping projection of plate A. In the central section (see fig. 5) the edge of the cloth stands vertical, as seen at *j*.

By arranging two pairs of such plates as shown in fig. 7, the cloth is made to turn twice, and in the central part *i* the edge is properly doubled for being hemmed by the needle of a sewing machine. F is the spring which holds the cloth in the rear of the plates.

The inventor says: I do not claim a device invented by S. C. Blodgett, for cording umbrella covers, in the use of which the edge of the cloth in a partially turned state is guided into a slot, and a turn over the cord completed by passing under the presser.

I *claim* the method of forming hems on the edge of flexible materials by means of folding guides made to turn the edge 180° or more, substantially as described.

And in combination with guides, substantially as described, I also claim the employment of a spring (F, fig. 13) or analogous device:

1st. To hold and to guide a piece of cloth by an edge or plait.

2d. To cause the cloth to follow the guides, placed between it and the needle, with certainty.

3d. To keep the cloth on a stretch while the stitch is being drawn.

No. 14,022.—PHINEAS L. SLAYTON.—*Improvement in Sewing Machines.*
—Patented January 1, 1856.

This machine is intended to sew and embroider cloth and also to work button-holes. The shuttle-box B is rotary; the shuttle C is made to run as near the circumference of the box as possible, see fig. 2, and the parts by which it is operated are represented in fig. 1, and in detached views figs. 3 and 4; the shuttle is operated by these arrangements in such a manner that there is no possibility of missing a stitch. Every time the shuttle makes one revolution the thread from the cloth would either twist or untwist, which would cause the thread to have so much twist as to kink and prevent it from working, or make it too slack; to overcome this, the arrangement as represented in figs. 5, 6, 7, 8, and 9, is made use of.

Figures 10, 11, and 12 show the arrangement of the feeding apparatus: fig. 10 is a side view, fig. 11 a front view towards the shuttle-box, fig. 12 a rear view of the same. The needle frame E, with all that is attached to it, and the plates F¹, G¹, H¹, with everything attached to them, form a separate sliding frame which moves in a lateral direction of the cloth by means of cam I², which is brought in contact with the end of H¹ at every revolution of the shaft, and as there are two stitches made at each revolution of the shaft; there is a stitch made at each end of the motion; carrying the needle-arm and shuttle-box with it. This motion is regulated by patterns M¹, M², M³, figs. 13, 14, and 15, of whatever shape will suit the figure to be worked, which is attached to the lower end of the frame, as shown in fig. 1.

Claim.—What I claim as my invention and desire to secure by letters patent, is—

1st. The horizontal motion of the needle and shuttle-box combined, at any required distance from the cloth.

2d. The combination of mechanism by which the pattern receives motion and operates to control the movements of the needle and shuttle, consisting of the worm wheel L and screw, or their equivalents, of which the screw or their first mover is furnished with arms Z¹, Z¹, operated upon by a lever O¹ on a shaft S¹ which receives a continuous rotary motion, substantially as herein described.

3d. Though I do not claim a circular shuttle-box, or raceway and revolving shuttle, I claim furnishing the revolving shuttle with a re-

volving bobbin or ball F, containing the thread and spool N, by which the twist of the thread remains unchanged, or their equivalents.

4th. I claim the manner of connecting the fly F with the feeding-hook H as it is operated upon by the thread as the shuttle passes through the loop to prevent missing stitches.

5th. The feeding apparatus attached to the revolving turn-table I³ and otherwise arranged and combined, substantially as herein described.

No. 14,141.—JOHN O'NEIL.—*Improvement in Sewing Machines*.—Patented January 22, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim a feed bar, or one divided into a number of points; nor do I claim a roughened surface of any kind; but I *claim* the broad chisel-edged piece *e*, which takes hold of several of the warp or weft threads, and thus feeds along the material without piercing or penetrating the cloth, when such edge is of sufficient width to catch or hold several threads of the fabric being sewed, substantially as set forth.

No. 14,207.—ALFRED SWINGLE, assignor to ELMER TOWNSEND.—*Improvement in Sewing Machines*.—Patented February 5, 1856.

z represents the thread which, by means of this improvement, receives a proper and uniform tension. The improvement also serves to prevent the wax from being scraped from the thread, as takes place when a waxed thread is carried and pressed between two flat surfaces.

The inventor says: I do not claim a tension apparatus composed of a spring bearing against a fixed surface or another spring, the thread being drawn between the two; but I do *claim*, as a tension apparatus, the combination of a rotary grooved roller M and a pressure roller O, operating by means of a spring S, or its equivalent, essentially as specified; the same when a wax thread is used, producing advantages substantially as herein before stated.

No. 14,324.—T. J. W. ROBERTSON.—*Improvement in Sewing Machines*.—Patented February 26, 1856.

When the looper *b* is free, it rests upon the fixed rest *d*. The needle *a* and thread, when descending, pass close by the point of the looper, but so that as the formation of the loop is commenced by the slackening of the thread when the needle commences rising, the thread will pass under the point of the looper, and as the loop is drawn up through the cloth by the continued movement of the needle, it catches the said point and swings it up (see fig. 4) nearly close to the cloth A, a little behind where the needle passes through, leading the loop to such a position that the needle must pass through in its next descent. The



gages the cogs of the wheel J. The lever is vibrated in the usual manner, and thus an intermittent motion is imparted to the wheels.

Claim.—The method, substantially as herein described, of distending or gathering up the cloth or other substance where the needle operates upon it, to form the seam by combining in a sewing machine two distinct feeding wheels, or their equivalents, moving with a differential motion substantially as described.

No. 15,396.—ALFRED SWINGLE, assignor to ELMER TOWNSEND.—*Improvement in Sewing Machines.*—Patented July 22, 1856.

The thread is taken from bobbin X and passed through the thread carrier H of the hook B, the material to be sewed being sustained on the top of the support F. After the awl C has descended and punched a hole through the work it rises, and the hook B follows up straight through said hole, and immediately after the barb has been elevated above the work the hook is turned a little towards the thread carrier H, in order that during the next downward movement it may seize the thread. On the descent of the hook B the thread is drawn in the form of a loop through the work, the hook descending entirely below the horizontal needle D, which next passes into the loop and there remains long enough to permit the hook B to rise and pass between said needle and the thread carried by it. The horizontal needle next falls back, having looped its thread around the shank of the hook B. Next the hook descends as before, drawing a loop down with it through the cloth and the loop previously formed upon its shank.

Claim.—The employment of a hook in connexion with the looping needle, and arranging said hook so that it shall pass into the cloth or material from the same side of it on which the looping needle works or is situated.

No. 15,469.—SHERBURN C. BLODGETT.—*Improvement in Sewing Machines.*—Patented August 5, 1856.—Antedated February 5, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The arrangement of the crimping notch *g*, in the shuttle, for the purpose of drawing the slack thread from the needle, and thus preventing the loop of thread from being taken up a second time, as above described.

2d. The employment of a series of pawls or drivers around the circumference of a discoidal or circular shuttle, whereby the driving force is applied equally or nearly so, through a considerable arc of the circumference of such shuttle.

3d. The mode of driving the disk shuttle at its circumference, by means of a hollow pulley or sleeve B revolving around a fixed shaft or axis C.

4th. The mode of giving motion to the needle arm E, and the feed-rollers, by direct connexion with the same sleeve B, or revolving shaft,

to which the drawers d are attached, which drive the disk shuttle, substantially as described.

5th. The arrangement of the cams C C^1 and lever k^1 , for operating the slide k , in combination with the cam e and arm H , for operating the pressure pad, in the manner and for the purpose as herein before described.

No. 15,470.—JOSEPH BOND, Jr.—*Improvement in Sewing Machines*.—Patented August 5, 1856.

The driver E being set in motion, the teeth e on the top of the cylindrical portion d of the driver will, on account of the eccentricity of the latter with the stationary shaft D , enter the recesses of the spool case G , two teeth being in said orifices at a time; the other teeth as the driver revolves clearing the piece K , as well as the needle P , thus causing the spool case G to revolve within its holder, and at the same time leaving ample room for the operation of the needle and the lever L . The lever L is connected to the stationary spool case G in such a manner that by the action of the cam n in the driver E on the arm l of said lever, the hooked arm m catches the needle thread and holds the same while it is carried over the spool by means of a nose g on the latter, the thread being released from the hook when the spool case is in a proper position for the loop to escape.

Claim.—1st. The driving of the spool case G , by placing the latter on a stationary spool case holder, within a cylindrical driver, having any convenient number of internal teeth, the driver being situated eccentrically with the holder, so that the internal teeth of the former may catch into the recesses in the edge of the spool case, and cause the same to revolve, at the same time leaving a space between the holder and the driver on the side opposite to that where the teeth act on the spool case, for the play of the needle and its thread.

2d. The hooked lever L , in combination with the cam n , on the driver E , arranged and operating substantially in the manner and for the purpose set forth.

No. 15,635.—A. F. JOHNSON, assignor to himself and F. A. HOUGHTON.—*Improvement in Sewing Machines*.—Patented August 26, 1856.

In this sewing machine a positive motion is imparted to the feeding plate i by means of cam q , fig. 3, operating upon arm k , which is attached to a rocking shaft n , fig. 1, and connecting rod p , attached to the vertical shaft o . By the vertical up-and-down motion of the feeding plate i , the latter with the cloth is brought against the spring clamp u . The distance that the feeding plate traverses, and consequently the length of stitch, is regulated by varying the position of either end of the connecting rod p with regard to the centre of the cam q , which can be effected by operating the screw w in the female screw r .

The shuttle a^1 is operated by an elliptical shuttle thrower b^1 , turning on pivot c^1 , and actuated by a cam d^1 on the driving shaft b . By

reference to fig. 2, it will be seen that when the cam d^1 bears on the part of the shuttle thrower b^1 nearest its pivot c^1 , the shuttle a^1 will be moved through a longer space in the same time, or will be moved quicker than when the cam d^1 is at the most remote point from its pivot c^1 , thereby causing the shuttle to travel faster in passing through the loop than in going back.

The inventor says: I do not claim the feed motion described; and although eccentric shuttle throwers have been used before, I cannot find that the pivoted swinging ellipse or a thrower has been so combined with a cam which operates it as to get a quicker motion of the shuttle when the cam operates near the point and is throwing the shuttle forward through the loop than when it is drawing it back.

I *claim* the combination of a swinging ellipse, as a shuttle thrower hung on a pivot, with a cam on the driving or other rotating shaft, so operating with said swinging ellipse as that when the cam is bearing upon it near its pivot it shall move the shuttle faster or through a larger space in the same time than when it is bearing upon the other parts, for the several purposes set forth.

2d. I claim the combination of the rocker shaft and its arm K K and connecting rod with the grooved cam, operating together for giving the required motions to the feeding plate, substantially as described.

3d. I claim the means employed for varying the length of the feed motion, and consequently the length of the stitch, at pleasure, the same consisting of a screw shaft working in the vertical hollow shaft that moves the rocker shaft, and raising or lowering a loose collar to which the connecting rod $p p$ is attached.

No. 15,695.—CHARLES R. GARDNER.—*Improvement in Sewing Machines*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—The sharp pointed needle having a flexible beard, as described, for sewing in woven, felted, or other close fabrics, in the manner set forth.

2d. The adjustable slide C, so arranged as to close the beard of any sized needle that may be used in the machine.

3d. Also the guide G, consisting of the thread channel C^1 and the needle passage with the side thereof either slightly inclined, as described, or provided at the top with the inclined groove J, and so operating that the feed motion given to the cloth shall carry the thread in proper position to be caught by the hook or beard of the needle, as described.

4th. Also the folding plate E or its mechanical equivalent for the purpose specified.

I do not claim running several folds or corrugations on the needle at the same time, as is done in machines for sewing with a running stitch. Nor do I claim sewing along parallel with the fold, as is done in hem-

ming, binding, and forming welts, where the length of the stitch is parallel with the fold.

I *claim* sewing with a machine through one fold or corrugation of the material at a time, the cloth being fed along at right angles, or nearly so, to the line of the fold, substantially as described.

No. 16,026.—S. H. ROPER.—*Improvement in Sewing Machines*.—Patented November 4, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features of it will be understood by reference to the claim and engravings.

Claim.—1st. A thread guide which guides the thread into the eye of the needle by means of the projection *y* and the thread holder *m*, forming a thread clamp, and gripping and holding the thread between them while the thread guide with its clamp revolves until the thread is wrapped partly round it and stretched across the aperture therein; and then also by means of the thread guide with the thread thus held moving laterally, until in this manner and by means of these rotary and lateral motions the thread is effectually guided into the eye of the needle.

2d. The working of eyelet holes in cloth or other material by means of a rotary feed motion combined with the slotted tube *r* and two needles, all substantially as described.

No. 16,030.—ISAAC M. SINGER.—*Improvement in Sewing Machines*.—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not wish to be understood as limiting my claim of invention to the precise form and construction of parts, as these may be varied without changing the principle of my invention.

I *claim* operating the needle to give it the required reciprocating motions, substantially such as described, by a crank-pin or roller on a rotating shaft, acting in a cam groove, substantially such as described, whereby the required motions are imparted to the needle with much less extent of motion of the crank-pin or roller in the cam groove, and consequently less friction, than if the cam groove were on the shaft, and the pin or roller on the needle-carrier, as described.

I also claim projecting the operative part of the surface of the feeding apparatus through the surface of the table, substantially as described, so that such feeding surface may act on a portion of the under surface of the material to give the required feeding motion to space the stitches, while the other portions of the said material slide on the table which answers the purpose of stripping the said material from the feeding surface, and to cover and protect the mechanism which operates the feeder, as set forth.

I also claim imparting the feeding motion to the feeder, to present

the material to be sewed to the action of the needle for spacing the stitches, by griping the periphery thereof, or any equivalent therefor, by a griping lever, substantially as described, in contradistinction to the action of the pawl or hand, catching on to ratchet teeth, whereby the extent of the feeding motion may be adjusted and varied to any degree, instead of being restricted by the size of ratchet teeth, and whereby also I avoid the wear and liability to derangement incident to the use of a ratchet motion, as set forth.

And, lastly, I claim in combination with the feeder attaching the presser for controlling the material to be sewed, and holding it to the surface of the feeder to a slide or equivalent therefor, substantially as described, so that the plane of its under surface shall always bear the same relations to the plane of the table in a line at, or nearly at, right angles to the line of the seam, whether the material to be sewed be thick or thin, and for the purpose set forth.

No. 16,136.—WILLIAM C. WATSON, assignor to Himself, GEORGE H. WOOSTER, and MORRIS KNIGHT.—*Improvement in Sewing Machines.*—Patented November 25, 1856.

As the needle descends through the cloth and commences to rise, pushing out thereby the thread which lies at the inner side of the needle, the hook *a* is in the position as shown in fig. 3. The cam *B* then strikes the tail of the lever connected with *A*, which is moved in the direction of the arrow. The hook *a* catches the thread and draws the loop off to one side, then, turning round, it spreads the loop as shown in fig. 4. The needle, in descending, passes through the groove in the brace-plate *i*, placed on the opposite side of the hook, where it is braced by the side of the groove, and steadied against the lateral pull of the hook, at the same time that the feed finger *k*¹ returns to be ready for a new grip upon the cloth; and as it pushes along against the frictional pressure of spring *K*, the cloth is kept from going with it by the needle holding it in place, the brace-plate also serving to steady it against this action as well as against the pull of the hook.

Claim.—The revolving and reciprocating looping-hook, constructed and operating substantially as described.

Also, the inclined and grooved brace-plate *i*, so placed beneath the cloth as to deflect the lower end of the needle to one side of its path, whereby its vibrations are prevented, and it is secured from breakage by the lateral pulls, as set forth.

No. 16,234.—JAMES E. A. GIBBS.—*Improvement in Sewing Machines.*—Patented December 16, 1856.

By turning the crank the shuttle *b* is thrown back, and the needle *I* descends. Half a revolution being completed, the arm *H* begins to rise, but does not lift the needle-bar *g* in the first part of its motion; that is done by the recoil of spring *a*² against pin *c*². This forms the loop in the vertical groove *o*; the needle-bar stops for an instant of

time, while the arm H is moving from the lower to the upper shoulder of the neck. At this moment the shuttle *b* darts through the loop, the needle recommences its upward motion, and draws the shuttle thread up to the centre of the cloth, and forms the stitch; in the mean time the feed motion is put in operation, and the clamp K is moved up another stitch.

The inventor says: I *claim*, 1st. Feeding up the thread to the needle by connecting the needle-thread with the cloth-feed motion, or by giving the needle-thread an independent feed motion, so that there shall be sufficient thread, and no more, at each stitch fed into the needle to form the stitch, thereby causing the needle to draw the shuttle thread into the cloth, and never above it, for the purpose of insuring the meeting of the loops or locks within the body of the cloth.

2d. I do not claim straight clamp feeders for the purpose of feeding the cloth, as they are not *new*.

But I *claim* fastening the cloth upon a slotted table, moving with a rectilinear motion by means of a slotted curved spring, the slots in both spring and table corresponding with each other, and holding the cloth on both sides of the seam.

No. 16,237.—LEWIS JENNINGS.—*Improvement in Sewing Machines*.—Patented December 16, 1856.

The principal features of this invention will be understood by reference to the claims and engravings; a detailed description thereof would take up too much space to be given here.

The inventor says: I do not claim the belaying double-looped stitch, described in the patent of W. H. Johnson, dated March 7, 1854.

I *claim*, 1st, the formation of the seam from a single thread by passing each loop, after it has passed through the cloth, or material to be sewed, through its immediate successor, and round the second one which succeeds it, by means of a needle and a "thumb and finger," operating substantially as described.

2d. The combination of the arm F to which the thumb and finger *b c* are attached, the pivot *f*, the slotted arm *i*, the fixed pin *j*, and the lever G, or its equivalent, substantially as and for the purpose set forth.

No. 16,251.—WILLIAM R. LANDFEAR.—*Improvement in Sewing Machines*.—Patented December 23, 1856.

As the shaft C is rotated, the crank D on descending draws down the needle-bar F G H, carrying the needle through the cloth, which is on plate O, the bar sliding on fulcrum J. As the lower end of the bar is carried around by the crank, the needle I draws the cloth forward a short distance for a stitch; at the same time the crank E carries the shuttle-guide K forward, carrying the shuttle L through between the needle and the thread which it carries. The crank D now raises the needle and draws up the loop of thread through which the

shuttle has passed, while the shuttle descends and draws the other thread tight.

The inventor says: I do not claim the forming of the seam by means of the needle and shuttle, or the feeding of the cloth by the needle.

I *claim*, first, the manner of regulating the length of stitch by raising and lowering the fulcrum J, thereby changing the relative lengths of the two arms of the lever G, as described.

I *claim* the manner of combining the shuttle-guide K with the crank E and fulcrum N, for the purpose of giving the shuttle a downward motion when the stitch is tightened, in the manner set forth.

No. 16,321.—JEROME B. WOODRUFF.—*Improvement in Sewing Machines*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I *claim*, 1st, the construction of a feed-bar *g* sliding in a dovetail or slotted guide and moved by a lever E, connected with the feed-bar *g* by a swivel joint, or its equivalent, so as always to move the feed-bar *g* in a plane with the material being sewed, the feed-bar *g* being moved back the distance required for the length of the stitch while the needle is in the material, and when the needle is withdrawn is moved forward, carrying the material therewith.

2d. The arrangement of a series of pins *r* through which the needle thread is laced, for the purpose of giving a uniformity of tension without affecting its twist, or their equivalent.

3d. I am aware that needle-bars have been made to vibrate in the arc of a circle, which I do not claim.

But I *claim* a balanced needle-bar for sewing machines when constructed in the form of a segment of a circle operating the shuttle-driver by one end direct, and carrying the needle by the other end, when the whole of said bar F forms the arc of a circle, of which the point of suspension is the centre, as described.

4th. A slotted shuttle-driver P, the same being operated direct from the needle-bar, and so arranged that the shuttle may pass through the loop of the needle thread in its proper time, gradually decreasing its speed and stopping at or about the same time with the needle, as described, or its equivalent.

5th. I do not claim carrying the shuttle back and forth by two pins, one at the heel and one at the point, independent of a shuttle-carrier; for this has been done by Messrs. Blodgett & Lerow, and patented to them.

I *claim* carrying the shuttle back and forth by a single pin *o*, as described.

No. 16,315.—A. F. JOHNSON and F. A. HOUGHTON.—*Improvement in Sewing Machines*.—Patented December 23, 1856.

By the arrangement of the parts, as stated in the second claim, the brake *u* is caused to operate upon the circumference of the wheel X,

and thus to regulate the speed of the machine when the speed of fan-wheel a^1 increases beyond the desired rate of the machine.

The inventors say : We do not make any claim now to the manner of vibrating the needle-arm by means of an eccentric stud working in the slotted arm.

But we *claim* the described arrangement of parts of a spring power mechanism, when combined with a sewing machine, and located in a box forming the pedestal of said machine.

We also claim the device by which the machinery is made self-regulating as to speed, consisting of the lever U and brake u in combination with the fan-wheel a^1 attached to the loose collar c^1 , in the manner described, and operating as set forth.

No. 14,956.—WILLIAM O. GROVER.—*Improvement in Cases for Sewing Machines*.—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Arranging a box or case for a sewing machine, so that, when open, the box shall constitute the bed for the machine to be operated upon, and hanging the machine thereto to facilitate oiling, cleaning, and repairs, without removing it from the box ; and the peculiar adaptation of the handle F, so that it may be pushed out when required to drive the machine, and when returned within the box shall serve to prevent motion of the parts whilst the machine is being transported.

No. 15,402.—BURRITT C. BOYES, assignor to Himself and HERMAN DERCUM.—*Improvement in Folding-Guides of Sewing Machines*.—Patented July 22, 1856.

The cloth E passes through the helical rings C D, fig. 2, and under the guard, and at a sufficient distance from the orifice a for the penetration of the needle ; the cloth, by passing through said rings, is folded or hemmed, as represented in fig. 2.

Claim.—I do not confine myself to the precise shape of the metal plate B, as shown, to the precise arrangement of the guard $b b^1$ in respect to the plate, or to the number of helical or slit rings shown.

Nor do I claim a device for which a patent was granted to Seth P. Chapin, and in which hems are formed on the edges of flexible materials, by means of folding-guides made to turn the edge 180 deg. or more.

But I *claim* the employment of one or more helical or slit rings for the purpose of forming on the edges of fabrics single or double hems, or for forming plaits in the middle of fabrics previous to the said hems or plaits being submitted to the action of the needle and thread of sewing machines.

No. 15,020.—ISAAC M. SINGER.—*Improvement in Sewing Machines for Binding Hats.*—Patented June 3, 1856.

Between the folding g and the gauge f is a bifurcated spring i , one branch of which serves to make pressure on the binding on the rim of the hat, and the other to extend over the pressure-pad e , so that when the pressure-pad is lifted the spring will be lifted also.

The binding is carried alternately in opposite directions, around the folds of the wire k , to keep the binding under a state of tension as it is drawn by the feed-motion. The binding is guided to the folding-tube g by means of the guides $l\ l$.

The spring n bears against the body of the hat, so that its tension will tend to push the hat in a direction the reverse of the feed-motion. The tension of the spring n being very slight, so as not to overcome the bight of the pressure-pad on the rim when the needle is drawn out, and yet being sufficient to prevent the body of the hat from being moved towards the back of the table by the feed-motion, the effect of the feed-motion will be to turn the hat and to keep the edge of the rim against the face of the gauge to insure the making of the range of stitches at a regular distance from the edge.

Claim.—The method of turning the hat by the action of the spring, or its equivalent, in combination with the feed-motion acting on the rim, and the gauge against which the edge of the rim bears.

And I also claim the mode of regulating the tension of the binding, and smoothing out the plaits and kinks by passing it around the several folds of a spring.

No. 16,120.—A. F. JOHNSON.—*Improvement in Stitches for Sewing Machines.*—Patented November 25, 1856.

The thread is carried in a loop form by the needle, both in passing up through the cloth and down through the same, while the shuttle carries the thread in a single strand through the cloth, thereby tying or knotting the thread, as represented in the engraving, and in such a manner that it cannot possibly be drawn out.

Claim.—Making a stitch of a single thread by throwing a shuttle and thread through a loop formed from the shuttle thread, as described, thereby tying or knotting each stitch, for the purpose of uniting pieces of cloth or other material to be sewed.

No. 15,535.—THOMAS W. TAYLOR.—*Improvement in Spinning Frames.*—Patented August 12, 1856.

The neck of the flyer F is of sufficient length to receive the bearings in the upper and lower side of a box B , running lengthwise of the frame, through which passes a shaft L , communicating motion by bevel wheels to a spur-gear A , which, meshing into pinions a upon the necks of the flyers F , drives both front and back lines of flyers, instead of using two shafts for driving both lines, as is the case in the machines used heretofore.

Claim.—The construction, arrangement, and driving of the flyers or fly-frames, in combination with either a live or dead bobbin spindle, as the case may be, substantially as set forth.

No. 16,028.—JOEL SMITH.—*Improvement in Throstle Spinning Machines.*—Patented November 4, 1856.

Motion is imparted to this apparatus through the main shaft A to the conical pulley F, thence by belt to pulley E; pulley G drives pulleys I and H, and screw K, which operates worm-wheel L, thence shaft M, pinion O and pinion P. The pins Q, on pinion P, tilt lever R, which actuates pawl T, and ratchet-wheel U, and screw V, thus causing the nut W to move on said screw, and the arms attached to nut W, cause the belt which passes around the pulleys E and F to traverse upon said cones, so as to communicate from the shaft which drives the spindles to the rollers a motion constantly varying in speed, and that in ratio corresponding to the increase of the diameter of the bobbin while being filled.

Claim.—Regulating the twist of the yarn in ring-spinning machines by communicating a gradually accelerated motion, proportionate to the gradually increasing diameter of the bobbins, to the rolls which give out the yarn to the bobbins, substantially in the manner and for the purposes set forth.

No. 14,482.—LYMAN WIGHT.—*Improvement in Spinning Wheels.*—Patented March 18, 1856.

The hand-wheel 6 transmits motion to the spindle 20 by means of the pulley 9. The attendant splices the roll to a thread in the spindle 20, and by pressing his foot on the treadle 14, drives the spindle back and draws out the thread. The weight 8 at the end of the lever 12 forces the spindle back again.

Claim.—Attaching the spindle of a hand-spinning wheel to a vibrating pendulum, and operating the same, substantially in the manner and for the purpose set forth.

No. 1,1531.—HENRY S. HOUGHTON.—*Improvement in Brushes for Cleaning Travellers.*—Patented June 17, 1856.

The cleaner consists of a piece A to hold the brush G. The cleaner is connected to the piece E, which rests on the ring rail C. These pieces are adjusted so that the ends of the brush shall be lightly hit by the traveller H in passing the front of each ring, and catch the waste fibres without retarding the traveller.

The inventor says: I do not claim the use of a brush to clean a throstle, whether automatically operated or otherwise, when the live or dead spindle alone is used; but I *claim* the application of a brush, when constructed and operated substantially as described, to the delicate movement of the ring traveller, so as to rapidly clean the same, without breaking down the thread.

No. 14,858.—LUCIUS DIMOCK and IRA DIMOCK.—*Improvement in Machinery for Trebling Single Thread*.—Patented May 13, 1856.

Before starting, the carriage F is run up near shaft G, and the threads from the bobbins are arranged as seen in figure 3, after which the carriage is allowed to run back, which leaves the threads 1, 2, 3 stationary, while the hitch-pin h^1 draws off the thread from B, and runs out with a double thread. The motion is then reversed, and the spool C takes up 1, 2, 3, while 2 and 3 slips from g , and enchains the thread passing through said arm. As the carriage arrives within a very short distance of the shaft G, the said shaft with its arm g is thrown back (figure 1) by means of arm k and stud j^2 , and the shaft H is turned by means of lever n , pin s^1 , and pin p , so that the hitching arm h descends far enough to throw the loop over the end of the conducting arm, (figure 1,) and the portion of threads 1 4 strikes the conducting arm, which causes it to slip over the top of the hitch-pin. The loop passes then down to the bottom of the conducting arm, and the hitch-pin is caused to fly up by the escape of lever n , past the pin p , and thereby to hitch on it the portion of thread issuing from the conducting arm, so that when the directions of the rotation of the shaft J, and of the motion of the chains I I are changed, the hitch-pin runs back with that portion of the thread doubled, and thus commences a repetition of the looping and enchaining operation.

Claim.—The rock-shaft G, with a hollow conducting arm g , to conduct each strand thread from its bobbin to the hitching-pin and its equivalent, and to effect the enchaining of the loops.

2d. The attachment of the hitching-pin or pins h^1 to the arm or arms h of a rock-shaft, for the purpose of forming and disengaging the loops.

3d. The arrangement and combination of the rock-shaft G having a hollow conducting arm or arms g , the travelling carriage F carrying the rock-shaft H and its vibrating hitching arms h , the strand bobbins B B, and the trebled thread spools C C.

No. 14,969.—MARCUS ORMSBEE.—*Improvement in Winding Thread from Skeins*.—Patented May 27, 1856.

The hooks are to be caught into the dress on the knees, and by separating the knees the spools are placed at the exact distance apart required to tighten the skein, which may then be wound without difficulty.

Claim.—The arrangement of the hooks a , the spools c , and the elastic strap B.

No. 16,164.—ANDREW L. FULLER.—*Improvement in Covering Thread with Wool*.—Patented December 2, 1856.

The spindle F is attached to the frame of a card to hold the bobbin of the thread which forms the core of this covered thread, and the end of said thread is passed into the condenser C and between the rollers

D; the fibres of the last roll A are delivered by the comb B, the motion of which curls the fibres around the core, and the rolls D draw the whole through as condensed and perfect, and the core will be found in the centre of the thread.

The inventor says: I do not claim the weaving of quilted, wadded, or padded goods, nor the use of wadding in the loom. Neither do I claim making the sliver of two materials in order to spin a finer round a coarser, or *vice versa*, as I am aware that is old; but I *claim* the described mode of placing the core in the sliver and covering it by the combined action of the comb B and condenser C, so as to produce the sliver above described, and this I claim whether a twist be given to the sliver or not.

No. 15,308.—SAMUEL TAYLOR.—*Improvement in Brushes for Dressing Warps*.—Patented July 8, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

Claim.—The improved warp-dressing brush as made with the external ends of its bristles cut slantwise, or bevelled with respect to their stocks, for the purpose of enabling the warps to enter the brush with more facility than would be the case were the points cut off square in the usual way.

No. 14,061.—GEORGE L. JENKS.—*Improvement in Machinery for Making Weavers' Harness*.—Patented January 8, 1856.

This is an improvement upon J. S. Winsor's machine, patented January 2, 1855. S^1 is one of the hollow studs through which pass the twines for forming the harness bands b^1 . Fig. 2 shows the adjustment for a different width of harness. The head-pieces a a^1 (of which there may be two or more for each stud) carry the stems u^1 , upon which are formed the knots for connecting the heddles to the harness bands. With the head-piece a the studs are essentially like Winsor's. By having studs a^1 with arms of different lengths, the distance between the two stems u^1 and between the two bands b^1 , and consequently the length of the heddle and width of the harness, can be increased. When a pair of head-pieces a^1 is employed, it is necessary, in order that the points of the stems at their inner ends may pass the outer ends of the head pieces, that the depressors should have a movement about in the dotted lines 23 and 26. To produce this movement the packing piece 22 is taken from hole 21, and the pieces 28 and 27 are secured to the sides of the depressor bar X.

Claim.—1st. The within described method of adapting the machine to the making of harness of different widths by the application of movable head-pieces a a^1 of different forms to the studs S^1 and its fellow, which form the end or outside studs of the range, and the application to the single depressors of a movable packing piece 22 and blocks 27 and 28, or other variable guides, the whole operating substantially as herein described.

2d. Guiding the operations of the arms which carry the fingers 29, employed in forming the loops and knots, to produce the eyes of the heddles by means of a pin 37 working in a slot in plate 33, which is made variable by swinging on a stud 35, whereby the movement of the finger may be varied to any extent necessary, without varying its position when in contact with its respective stud S^2 or S^4 , substantially as herein described.

No. 16,029.—JOHN C. SMITH.—*Improvements in Weaving Long Warps*.
—Patented November 4, 1856.

The yarn is taken from the reel through the perforated plate B and over the roller C, thence down under and between the rollers D, thence between the rollers I and L, and is laid in layers on the box P. The yarn is taken from the box P up over top roller A, and around middle roller A and forward to roller D, down to roller E, and through the take-up motion F F, and through the harness in the usual manner, and made fast in the ordinary way, as is usually done previous to commencing the weaving operation.

The inventor says: I do not claim a carriage travelling at right angles with a warping frame, carrying the beam so that the warp may be laid in a regular succession of layers as received thereon, for I am aware that such is not new. Nor do I claim dispensing with a warp beam in manufacturing cloth, for I am aware that cloth has been woven with yarns for the warp taken directly from spools. But I *claim* a box arranged substantially in the manner and operated by the mechanism described, in combination with the arrangement for dispensing with the warp beam as described, for the purpose of laying the warp in a regular smooth succession of layers evenly, that the box may give out the warp free from twists or tangles.

No. 15,415.—ALGERNON L. COLE.—*Improvement in Harness for Weaving Seamless Bags*.—Patented July 29, 1856.

The nature of this invention consists in providing each leaf of harness with an additional row of eyes K to the one row now in use, thereby dispensing with an additional set of cams. One set of cams only is used to spring two distinct warps, four leaves of harness being required to weave a twilled or mixed twilled bag, and only two leaves being required to weave a plain bag. And with this kind of harness two distinct warps can be woven into plain or twilled cloth in the same loom, one warp being above the other, and two sets of shuttle boxes, one being placed above the other and stationary.

Claim.—The application to weavers' harnesses of the addition of one row of heddle eyes, making two rows instead of one upon each leaf of harness, as described, or any other substantially the same.

No. 16,248.—THOMAS NELSON.—*Improvement in Machinery for Weaving Shade Cord*.—Patented December 16, 1856.

The cord to be covered is passed up through D, P, and R, to roller S, and thereto attached; the ends of the threads from the spools are attached to the cord just below R, and the woof threads, being carried up through V, are also attached below R. The machinery being as represented in the engraving, it will be seen that car H^1 is down, and that the shuttle U will pass over it; on starting the machine, car H^2 , which is already half way up, rises so that the shuttle U passes under it as the shuttle, revolving with the eccentrics A M N, passes on. Car H^3 is and continues down, the woof passing over it; but car H^4 begins to rise, and when the woof has reached it has risen so that the shuttle passes under it. The same operation in a reversed direction takes place in regard to shuttle U^2 , these combined operations causing the passage of the shuttle between an up and down thread in succession.

Claim.—The arrangement of the inclined planes C C G G around a circle, and divided from each other by the chasm or pathway Z, the same being intended as the course or track of the spool cars. The arrangement of the spool cars in combination with the eccentrics M and N, which operate the cars in the rear of the inclined planes by means of pens or equivalent apparatus passing from the cars through slots in the planes. The arrangement of carriers or shuttles U U^2 attached to the eccentrics passing through the chasm Z, between the upper and lower planes, and traversing circularly and delivering the woof or filling between the threads of the warp, as they change their relative positions, by the alternate vibrations and depressions of the spool cars.

No. 14,163.—JOHN McCRONE.—*Improvement in Cone Tubes for Winding-Frames*.—Patented March 18, 1856.

L represents the flanges which project through a slot in the socket, for the purpose of preventing the yarn from wearing against the socket. N is a projection on the said socket, with a button attached to it for the purpose of securing the cone in its place. B is a zinc lining inserted between the cone and the metal socket.

laim.—The use of the crystal as a material for the cones or trumpets used for shaping and consolidating yarn of woollen, cotton, or other materials on bobbins.

No. 15,856.—ANDREW W. PUTNAM.—*Improvement in Machinery for Cleaning Wool*.

The wool, being spread on the apron b , is carried by means of the feed-rollers e to the main picking-cylinder h , where it is operated upon by the teeth i , when the coarser impurities drop through the open concave j , and the wool is carried over the closed concave K, seized by the serrated plates o of the burring cylinder g , and carried over the con-

cave *l*, down and over the adjustable burring bar *q*, which separates all foreign matter attached to the fibres. As the plates *o* carry the wool upward, the blast from the fan *u* acts upon these, and discharges the wool to the rear of the machine.

Claim.—The combination of the main picker-cylinder and the open and closed concave, in combination with the burring cylinder, arranged and operating substantially as described.

I *claim* the burring cylinder in combination with the adjustable burring bar or bars, arranged and operating substantially as described, for stripping the burrs and other foreign substances on the fibres, as described.

No. 15,268.—WILLIAM H. WALTON, assignor to Himself and J. E. WINANTS.—*Improvement in Machinery for Combing Wool.*—Patented July 1, 1856.

The teeth of the combs *d d* take hold of the fibre projecting from the feed-rollers *b b*, which fibre is brought in contact with a cylinder apparatus *g i i'* for working the fibre. as the brushes *f* behind the combs pass the cylinders *g*, its ends strike the curved rails *c c c* affixed to the frame, which rails throw the brush outward and force the fibres on to the teeth of the small cylinders; after the comb has passed, the brush falls back, and the comb *d*, as it reaches point *W*, revolves on its axis *x* so as to reverse the position of the teeth. This motion is effected by means of a small pinion *n* gearing into rack *a'*, that slides in the line of the axis *x* by means of rod *c'*, lever *B*, and cam *x*. The comb, being reversed, passes onward into contact with the teeth on an endless chain comb, where the fibre is deposited. The clearing bar *m* is operated by means of rods *w w*, and cam *u*.

Claim.—1st. The reversing comb *d d*, arranged substantially as described, for conveying the wool from the feed-rollers *b b* past the cylinders and on to the endless chain-comb, as set forth.

Further, in combination with the above mentioned reversing comb, the brush *f* in the rear thereof, for the purpose specified.

Also, the clearing-bar *m* for clearing the fibres of wool from the cylinder *i'* before the comb reverses, when combined with the reversing comb.

No. 14,120.—ABNER J. SUTHERLAND.—*Improvement in Yarn-Dressing Frames.*—Patented January 15, 1856.

When the beam is full of yarn *B*, the lever *E y* is pressed down, and consequently the short arm *x* is also down and causes the spring *D* to exert its greatest force on the friction strap *C*.

The inventor says: I *claim* the use and application of a lever or its equivalent, one end of which presses on the surface of the yarn wound about the beam, and to the other end the friction spring is attached for the purpose and substantially as herein described.

I am aware that James and John Haworth obtained a patent in 1848

for a contrivance acting on the same principle as that above described; but that contrivance was applicable only to looms, and could not, without material modification, be applied to dressers.

I do not claim the use of my let-off motion as applied to looms, but only as applied to dressers and similar machines excepting looms.

I do not claim the friction strap with the spiral spring, as they have been used before.

No. 16,117.—GEORGE G. HENRY.—*Improvement in Manufacturing Cotton Yarns*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not wish to be understood as limiting myself to any precise sequence of machinery after the combined gin and lap machines, for it is obvious that my invention may be applied to any preferred machinery for manufacturing cotton yarns.

I am aware that it has been proposed to spin cotton yarns directly from the gin, as in Brant's patent of 1823, and by other modes. This I do not claim.

But I *claim* the combination of the gin and preparation, substantially in the manner and for the purposes described, that is to say, the arrangement of the cotton gin in immediate connexion with, and to operate in combination with the spreader or lap machine of any desired construction, so that the gin and spreader combined shall operate in a regular sequence with the carding and drawing, and other spinning machinery, substantially as set forth.

No. 14,815.—MOSES A. JOHNSON.—*Improvement in Manufacturing Felted Yarns*.—Patented May 6, 1856.

Steam is admitted into the rubber R a short time before starting, and the spools of roving S being laid upon the drum D, the several ends are separated as for spinning; each end is then introduced between the rollers V V and twist belt *g g*, and thence entered a short distance under the back edge of the rubber; the machine being started, the apron, rolls &c., carry the yarn forward beneath the rubber, which, having a motion at right angles to that of the apron *y* and vibrating, has the effect of rolling and effectually felting the roving into a smooth yarn, and it is finally delivered and taken up by the reel N. The rubber is vibrated by means of the connecting rods H H and cranks on crank-shaft F.

The inventor says: I do not claim the use of an endless apron, draw-rolls, twist-belt, reel, or self-adjusting belt, each being in itself old and well known.

But I *claim* the arrangement of the steam rubber R in relation to, and in combination with the endless apron *y y*.

IV.—CHEMICAL PROCESSES.

No. 14,722.—EBEN NORTON HORSFORD.—*Improvement in preparing Phosphoric Acid as a substitute for other Solid Acids.*—Patented April 22, 1856.

The pasty mass of phosphoric acid prepared in the usual manner is leached, and the extract together with the addition of white bone ashes concentrated and cooled. Wheaten flour and potato starch are then added in succession and the whole mixed, after which it should turn out friable, so that it may be passed through a sieve. When tried, the preparation should be packed in close boxes to prevent the absorption of moisture.

Claim.—Pulverulent phosphoric acid, for neutralizing alkaline bases, and producing carbonic acid at will from a mixture of this pulverulent acid with alkaline carbonates upon the addition of moisture or heat, or both.

No. 15,222.—WILLIAM T. CLOUGH.—*Improvement in Concentrating Apparatus for Sulphuric Acid.*—Patented July 1, 1856.

Lead is dissolved by hot sulphuric acid, but not by cold; the lead tank *e* is therefore not liable to be dissolved, as the heated acid in the furnace *a* becomes nearly cold before reaching the lead, after passing through the tiles and sand *a b c d*. The radiated heat from the under side of the arch *H* evaporates the watery particles from the sulphuric acid.

Claim.—The construction of a furnace *A* so that the sulphuric acid will not affect or injure the lead or mineral tank or pan during the process of concentration, by means of a hot surface being placed above the liquor, substantially as described in the above specification.

No. 15,662.—JAMES MACKINTIRE.—*Improvement in Ale and Beer Coolers.*—Patented September 2, 1856.

The ale to be cooled passes from pan *A* through the passages *F*, and is discharged through the escape pipe *g*. The water for cooling said ale is pumped through pipe *U* into vessel *I*, and passes through the passages *b, k, l*, pipes *m*, and passages *p* and *n*, into the spout *L*, the gate *o* serving to regulate the discharge of said water.

The inventor says: I do not claim constructing an ale or liquid-cooler, so that the heated liquid, while descending in a channel between plates, shall be cooled by cooler currents of water or liquid made to flow in a contrary direction against the outer surface of said plates or channel, as described.

Nor do I claim arranging the water and ale channels in a zig-zag

serpentine, or equivalent manner, with respect to one another, as described, so as to produce an effect as stated.

But I *claim* the combination of the passages *p n* and gate *o* with the ale and water chambers, pipes *m m*, and zig-zag passages; the same being for the purpose, or to accomplish results as set forth.

No. 15,957.—GEORGE THOMPSON.—*Improvement in Devices for Putting up Caustic Alkalies*.—Patented October 21, 1853.

This invention consists in wrapping the cakes of caustic soda in paper impregnated by a preparation of beeswax and rosin; by which said paper is rendered impervious, so as to protect said soda from the action of the atmosphere.

Claim.—The mode described, or its equivalent, of protecting small packages of caustic soda or potash from the action of the atmosphere, in the manner and for the purposes described.

No. 15,804.—JOHN FIDLER.—*Improvement in Journal-Box Alloy*.—Patented September 30, 1856.

This alloy is composed of six parts of copper and four parts of block-tin melted together; and to each pound of this product is then added nine pounds of zinc, which, when melted and mixed with the above metals, will serve as an alloy for journal boxes.

Claim.—The composition of the ingredients named, in the specified mode and proportions.

No. 15,934.—HENRY DAVIS POCHIN.—*Improvement in Preparing Clay for Alum Making*.—Patented October 21, 1856. England, January 30, 1855.

The nature of this invention will be understood by reference to the claim.

Claim.—The calcining of china, clay, or other aluminous minerals, with the carbonaceous substances, in the manner described, by which the alumina is brought into a condition to be easily acted upon by strong sulphuric and other acids, without adding thereto any substance injurious to the quality of the resulting compound; and the use of aluminous cake, obtained in manner described, in manufacturing the aluminous mordants used by calico printers and dyers, and in various other processes used by dyers, and in the preparation of white leather, in the process termed tawing; also in the manufacture of paper, as a substitute for alum and the ordinary sulphate of alumina, as well as for the purpose of deodorizing and disinfecting decomposing animal or vegetable matters, and for the preparation of the ordinary sulphate of alumina and alums of commerce.

No. 14,925.—PHILIP PERDEW and ALEXANDER W. BRINKERHOFF.—
Improvement in Ash-Leaching Apparatus.—Patented May 20, 1856.

The inventors say: We do not claim the boiling of ashes in a pan, neither do we intend to limit ourselves to the precise form and dimensions of the apparatus; for it is evident that they may both be slightly varied without altering the result.

But we *claim* the general plan and arrangement by which we are enabled to have one continued operation, instead of heating up for one charge, and cooling off and then shovelling out by hand.

We *claim* the pan *a*, combined with its reservoir, figure 2, immediately below it, having its opening through its bottom covered with grating and canvass, or its equivalent, leaving a space on each side of the reservoir, where the bottom shall be exposed to the fire in order to keep the ashes in constant ebullition, and having its conductor *d*, by which all the ashes may be discharged from time to time by the flowing of water without hand labor. (We hereby disclaim all pans, pots, or kettles that do not answer this description.)

No. 15,956.—WILLIAM THOMAS, Jr.—*Improvement in Stove Blacking.*—
Patented October 21, 1856.

This stove blacking is composed of two ounces of powdered graphite, one and a half ounces of lamp black, one ounce of asphaltum varnish, half an ounce of oxyde of manganese, and one and a half gills of common spirits of turpentine; these are mixed together until thoroughly incorporated, when the compound thus formed may be applied to the surface of stoves.

Claim.—The described compound to be used for coating stoves and metallic surfaces, to impart to them a very durable polish, and to protect them more effectually from rust, as set forth.

No. 15,983.—JOHN PHYFE.—*Ivory-Bleaching Apparatus.*—Patented
October 28, 1856.

The table *A* being exposed to the direct rays of the sun, the pieces of ivory to be bleached are placed upon table *A*. The rays of the sun, being then admitted through the glass cover *D* to the ivory, pass through the ivory and through the glass table *A* to the reflector *B*, by which they are thrown back again through the glass table and the ivory.

The inventor says: I do not claim the exclusion of air from the ivory during the bleaching process, and I do not confine myself to the construction of the apparatus in such a manner as to exclude the air during the process, or to any particular construction of the apparatus.

But I *claim* the bleaching of ivory by exposure to the rays of the sun on a glass table, with a reflector below it, substantially as described.

No. 15,590.—A. C. BRECKENRIDGE, assignor to JULIUS PRATT & Co.—*Improvement in Frames for Bleaching Ivory*.—Patented August 19, 1856.

The ivory pieces *e* are inserted into the grooves *a* formed of the glass pieces C and D, which extend through the entire length of the frame, thus the entire surface of the ivory pieces is exposed to the rays of the sun by turning the frame; either side of the ivory can be bleached, thus avoiding the tedious process of turning each piece separately, as was done heretofore.

Claim.—Providing the bleaching-frame with grooved strips of glass C C and D, to receive the ends or sides of the pieces of ivory exposed to the sun's rays whichever side of the frame is upward, substantially as described.

No. 16,100.—JULIUS A. ROTH.—*Bleaching Process*.—Patented November 18, 1856.

The paper pulp or other fibre to be bleached is placed upon the perforated bottom B of the tank A which contains the bleaching agents. Atmospheric air is forced into the bleaching liquid through the pipes *c*, by which a gentle agitation is produced in said liquid, and the free oxygen of the air is brought in contact with the bleaching agents, whereby their action is greatly facilitated.

Claim.—Aiding the action of the usual bleaching agents by the application of atmospheric air, in the manner and for the purpose substantially as described.

No. 14,662.—JOHN JONES.—*Improvement in Candle-Cutting Apparatus*.—Patented April 15, 1856.

The side of the box B, which is in contact with the tips of the candles, is made slightly concave, in order to have them cut of equal length by the circular cutter D (the form of the candles being slightly tapering). C C are guides upon which the box B is made to slide past the cutter D.

Claim.—1st. The concave guiding surface G as a means of gauging the candle's length, taken at its axis, as set forth.

2d. The combination of the sliding-box B with the cutter D, operating for the purpose of cutting candles of equal length, taken at their axes, as specified.

No. 16,211.—C. A. McPHETRIDGE.—*Candle-Dipping Machine*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Dipping candles on a continuous wick from spools E by passing it through the heated beeswax in vat I through gauge-plate J, and then alternately through heated tallow at H and cold water at F,

and through steam-gauge box K, and then separating them by means of the cutters *c*, as herein described and set forth.

2d. The steam chambers or floats G, constructed as described, and for the purposes set forth.

No. 14,376.—VINCENZO SQUARZA.—*Improvement in Candle Dipping Machines*.—Patented March 4, 1856.

A detailed description of this machine would take up too much space to be given here.

Claim.—1st. The employment of intermittently rotating vertical wheels C C, or their equivalents, carrying a number of wick-frames or wick-holders, in combination with a rising and falling dipping-trough F, substantially as herein described.

2d. I claim keeping the dipping-trough supplied to the proper level with tallow from a reservoir above by a valve which is opened by the trough, or by some attachment thereto every time it rises, substantially as herein described.

3d. I claim the within described method of regulating the supply of tallow to the dipping-trough to make up exactly for the quantity taken therefrom by dipping, by the employment of two or more arms L, L¹, L², arranged at different elevations on a pivot *n* attached to the trough, so that either one of them can be turned to a proper position to lift the valve in the reservoir.

4th. I claim the employment for the purpose of tapering off the points of the candles of a trough H of hot water, into which the candles are plunged by the raising of the said trough while the candles are stationary, substantially as herein described.

5th. I claim the construction of the wick-frames in pairs, each pair consisting of a shaft D, carrying two fixed bars *b b*, two sliding-bars *d d*¹, to which are attached two pairs of clamping-bars *e e* and *e*¹ *e*¹, and two wick boxes *g g*¹; all the said parts being arranged and operating substantially as herein described, so that each frame of the pair may in its turn be supplied with wick as required to commence a new batch of candles.

6th. I do not claim the reduction of dipping candles to a uniform size by passing them through draw-plates. I *claim* constructing the draw-plates in two parts attached each to the jaw or jaws of one or more pairs of nippers, whether attached rigidly or to rollers fitted to the said jaws, as herein described.

7th. I claim the swinging frame P with its jaws R R¹, and rotary cutters *y y*, all operating substantially as described, to take hold of the candles and cut them off when finished.

8th. I claim the arrangement and combination of the table N which carries the boxes and the jaws R R¹ which take the finished candles, substantially as described, that is to say: having both the table and the jaws on shafts or centres, and gearing them together so that they will move in such a way as to deposit the candles in the boxes gently and without injury.

No. 15,668.—JOHN ROBINSON.—*Improved Candle-Moulding Machine*.—Patented September 2, 1856.

The moulds, as they reach a point in line over the jaws J, rest in consequence of the pins *c* and levers H on the wheels E, and the teeth on the pulleys F gear into the racks G, and raise the jaws J, which separate the two parts of the moulds, the jaws ascending and grasping the ends of the wicks *a** of bobbins *b**; the jaws are then allowed to descend, the teeth on the pulleys F passing out of gear with the racks G. The jaws draw the wicks down through the moulds; the jaws when lowered are opened by bar *j* and the wicks above the moulds are cut off, the moulds being previously filled with tallow. The moulds pass along in the direction indicated by the arrow, and pass through a reservoir of water placed in the lower part of the framing. The water cools the tallow, and as the moulds reach a point directly over the jaws *n n* on the rod L, said jaws and bars M are raised by the arms K, the bars M being elevated sufficiently to open the moulds I, and the jaws *n* grasp the ends of the candles as they descend and draw them from the moulds, the plate P moving forward at the same time, throwing the candles into a receptacle Q.

Claim.—Attaching a series of moulds I to endless chains B B, which have an intermittent movement; the moulds being formed of two parts, and opened and closed at the proper time by the jaws J, operated for the purpose specified.

I also claim drawing the candles from the moulds, by means of the jaws *n n* attached to the rod L, arranged and operated for the purpose shown.

I further claim, in connexion with the jaws *n n*, the plate P, operating for the purpose of turning or conveying the candles into the receptacle Q.

No. 15,968.—WILLIAM C. CHILDS.—*Improvement in Mould-Candle Machines*.—Patented October 28, 1856.

In operating this machine the wicks are drawn from the spools in the spool-box B and upward through the moulds C, respectively, and are fastened to the bar H of the lifter frame E, each wick being run through one of the notches of the centering plate *d*. After the moulds have been filled with tallow, the bar H and frame E are elevated by means of a windlass, and the candles are raised out of their moulds, fresh wicks at the same time being drawn upwards through the moulds. By repeating this operation a number of times, a row of candles may be formed on each wick, which will depend from the bar H.

Claim.—Arranging the wick-centering plate *d* in the trough of the candle-moulds, and on the bottom of said trough as specified.

Also, so applying the front board to the bottom board of the trough, that said front board may be turned down or removed from the trough, in order that the vertical edge or front part of the surplus fat in the trough may be exposed, for the purpose of facilitating the removal of said surplus fat from the candles.

No. 16,056.—AUGUST HENGSTENBERG.—*Candle-Mould Machine*.—Patented November 11, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features of it will be understood by reference to the claim and engravings.

Claim.—The combination of the spools, as constructed in my machine, with their gearing and locking; also the securing of the cutter by means of the layer S, substantially as described, and for the purposes specified.

No. 14,397.—FRANCOIS GARCIN.—*Improvement in the Preparation of Tallow for Making Candles*.—Patented March 11, 1856.

For bleaching and purifying 3,500 pounds of tallow the following ingredients are used:

For washing the tallow are used $3\frac{1}{2}$ pounds of nitric acid, reduced by adding 22 parts of water to every 60 parts of acid. The tallow is then removed from reservoir 2 to reservoir 3 and melted, and there is then added to it 5 pounds of sulphuric acid, reduced by adding to it 25 parts of water to every 60 parts of the acid. The tallow is then taken to another reservoir 4 and mixed with 5 pounds of pure alcohol, 7 pounds of creta gallica, 11 pounds of slacked lime, and $1\frac{1}{2}$ pounds of camphor. It is then further bleached in other tubs 5 5, by adding to it 4 pounds of borax and 2 egg-shells. Then again it is removed into a double bottomed copper-boiler 6, and mixed with $1\frac{1}{2}$ pounds of pure alcohol, $1\frac{1}{2}$ pounds of camphor, and $\frac{1}{4}$ of a pound of oil of lemon—8, 9, 11, 12 are steam-pipes.

Claim.—The method herein described of bleaching and purifying fat or tallow, for the purpose of making candles, the same consisting in the use of reduced nitric and sulphuric acids, creta gallica, slacked lime, camphor, borax, egg-shells, and oil of lemon, in the proportions and order herein set forth and described.

No. 15,821.—BENJAMIN D. SANDERS.—*Improvement in Many-Wicked Candles*.—Patented September 30, 1856.

This invention consists in constructing a candle with three or more solid wicks, arranged angularly to each other, so that a straight line will not intersect them, and at such a distance apart that the several flames in uniting leave a central air-space between them, at the bottom, for the admission of air, thus affording a better supply of air than the supply on the exterior of a flame does.

Claim.—A candle constructed as described, with three or more wicks *a*, when said wicks are arranged angularly to each other, or in the path of a circle struck from the centre of the candle at equal distances apart or thereabouts, essentially as shown, and for the purposes specified.

No. 16,208.—WILLIS H. JOHNSON.—*Mode of Incorporating Bituminous Liquids with Wet Earths for Cement.*—Patented December 9, 1856.

This invention consists in mixing mortar in its wet condition with about fifteen per cent. of coal tar, which, when incorporated together, will form a better and cheaper bituminous mortar than that made by a composition of dry mortar and heated bituminous matter.

Claim.—The combination of bituminous liquid and aqueous cements or mortars, substantially as set forth.

No. 15,275.—HORACE BILLINGS.—*Improvement in Roofing Cement.*—Patented July 8, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The improved roof-coating cement or composition of matter, produced by combining shellac (or seedlac), rosin, linseed oil (or its equivalent), and powdered steatite (or its equivalent), in proportions which will give the said composition the character and adapt it to the purposes substantially as herein set forth.

No. 16,304.—ANDREW GRIMES, assignor to CHARLES DAY.—*Improvement in Burning Charcoal.*—Patented December 23, 1856.

The sticks of wood *c* are piled around the chimney *a*, and then kindled from its top. The top part of the pile, composed of the sticks *c*, is then laid on to the lower part; and when thus arranged the wood is prevented from burning to ashes without the use of any covering.

Claim.—Burning wood in the open air without any covering of earth, or any substitute therefor, in such a manner as to reduce any given amount of wood to a mass of red hot coals, preventing the pile from burning to ashes until the result is accomplished in the manner set forth.

No. 16,170.—TIMOTHY BROWN.—*Alloy Composition.*—Patented December 9, 1856.

The alloy, as specified in the claim, is intended to be used for metallic cheese hoops, as it will not be oxydated by the lactic acid of the whey.

Claim.—The metallic composition or alloy, composed of zinc from fifty-six to seventy parts, tin eighteen to eight parts, copper one part, and antimony one part, for the purpose specified.

No. 14,037.—ANDREW H. WARD, Jr.—*Improvement in Compositions for Treating Wool.*—Patented January 1, 1856.

This invention relates to the treatment of wool with oleic acid instead of oil. The oleic acid is used in the same manner that oil has been

ordinarily used; a small quantity, however, is sufficient for producing the desired effect, as it has a greater penetrating power in saturating the fibres of wool than oil. When the wool is to be cleansed a compound of purified carbonate of soda, sulphate of soda, and common salt, in the proportion of one pound to every quart of oleic acid is used, and this proportion dissolved in water is to be mixed with the portion of water in which the goods are first washed.

The inventor says: I do not claim the employment of ordinary oils or the mixture of crude oily acids called "*red oil*," for oiling and cleansing wool and goods. Nor do I claim the use of a nearly pure oleic acid in the treatment of wool, nor its subsequent removal by alkaline carbonates only; but what I do *claim* is, the employment of neutral salts as specified, with the alkaline carbonates and the oleic acid, for the purpose and to produce results as stated.

No. 14,832.—JOHN ROSE.—*Improvement in Compositions for Stuffing Leather*.—Patented May 6, 1856.

The inventor says: Being well aware that other meal than rye, and other oil or fatty matter than cod, if commingled with the wax, rosin, and molasses, can be used and would produce nearly the same effects, I therefore do not claim the rye meal or the cod oil exclusively, nor the precise proportions.

But I *claim* softening leather by stuffing it with a compound made of paste, made of rye or other meal, beeswax, rosin, molasses, and oil, or other fatty matter.

No. 15,161.—HORACE VAUGHN.—*Improvement in Compositions for Working Steel*.—Patented June 17, 1856.

The composition is used in a dry pulverized state and in the following proportions:

2 ounces of bi-chromate of potash.

14 ounces of prussiate of potash.

17 ounces of chloride of sodium.

Claim.—The dry compound of chloride of sodium and bi-chromate of potash, with or without the prussiate of potash, for hardening and tempering steel, combined, applied, and operating substantially as set forth.

No. 15,551.—LEWIS BUCHHOLTZ.—*Improved Blastic Compound*.—Patented August 19, 1856.

This composition consists of four ingredients, saltpetre, charcoal, lycopodium, and white sugar.

Claim.—I claim the composition and application of the ingredients mentioned, whether in the ratio described or in any other substantially the same, in the manner and for the purposes substantially as specified.

No. 14,911.—FRANCIS GERAU.—*Improvement in Artificial Decoloring Compounds*.—Patented May 20, 1856.

The inventor says: I will mention particularly that I do not claim the use of phosphate of lime as such and in general, as it is found in burned bones, and has lately been discovered in large alluvia; but it is the phosphate of lime in that particular state of precipitation, which state alone affords to the coal its main properties, and which is entirely different from the former.

Claim.—The use of phosphate of lime, precipitated out of a solution in muriatic acid, as an ingredient in a compound of materials for the manufacture of a decoloring coal, which other materials may be varied according to circumstances.

No. 15,563.—JANSING E. HOPKINS.—*Improvement in Felting Compounds*.—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—Keeping the articles to be felted constantly saturated with or immersed in a solution of saponaceous matter during the operation of felting, and near the close of the operation adding to said solution a small quantity of ammoniacal matter, substantially as set forth.

No. 15,520.—FREDERIC KUHLMANN.—*Improvement in Vehicle for Paint Compounds*.—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The admixture of silicate of alkali in substance with a paint, varnish, ink, or dye, (instead of using it in layers or coatings, as heretofore done,) using for the protection of the several individual coloring matters such agents as are known to scientific or practical chemists, and which I have described.

No. 15,806.—ISAAC GATTMAN.—*Improvement in Mixing Wheat Flour with Paints*.—Patented September 30, 1856.

This invention consists in manufacturing paints by grinding the dry or crude colors in a paste composed of one hundred pounds of flour mixed in fifty gallons of water, and the adding a solution of fifty pounds of rosin, and forty gallons of fish or any other drying or volatile oil; which paste is then diluted in two hundred gallons of boiling water.

The inventor says: I do not claim exclusively the use of watery solutions for mixing paints; but I *claim* the manufacture of paints by grinding crude colors in a composition of water, flour, or its equivalent, rosin, or its equivalent, fish oil, or any drying or undrying oil, in the proportions and manner substantially as set forth, in order that the paint thus manufactured may be produced at a cheap rate, and afterwards thinned with water to the required consistency.

No. 14,053.—DOMINIQUE EMILE COUTARET.—*Improvement in Disinfecting Fecal Matter*.—Patented January 8, 1856.

This invention consists in using a deodorizing liquid of the following description for disinfecting fecal matter: Chimney soot is boiled in water in order to extract from it the empyreumatic principle, and chiefly the creosote; salt of iron is then dissolved in this decoction, the liquid drained, and the deposit dried, which consists of charcoal, impregnated with acetate of iron, containing sufficient creosote to form a powerful deodorizing powder.

Claim.—The use of the ingredients named for deodorizing feculent or other decomposing organic matter, and converting said matter into manure, as described.

No. 15,959.—JOHN P. DERBY, assignor to the SALISBURY MANUFACTURING COMPANY.—*Improvement in Dyeing*.—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving. The object of it is to produce figures of various colors by the process of dyeing with no application of any process of printing, whereby the brightness of the colors is shown on both sides of the goods.

Claim.—Protecting certain portions of the fabric from the action of the dye, by a resinous compound, which may be applied cold; and afterwards removing the same by water, diluted alcohol, or the other means enumerated, substantially as set forth.

No. 15,361.—FRIEDRICH EMIL SCHMIDT.—*Improvement in preparing Vegetable Dye-Stuff*.—Patented July 15, 1856.

The nature of this invention consists in subjecting the juice of *Bacca Phytolaccæ decandriæ*, generally known by the name of buckberry, to a treatment by which the red pigment of the juice is so altered that it will give, with or without mordants, durable colors in red or violet. The treatment consists in filling said juice into hermetically sealed vessels, in which it will undergo, in the space of two months, such a change as to obtain the property to give a durable red color with mordants.

Claim.—The treatment above described of the juice, previous to its use for dyeing, to produce permanent and durable colors.

No. 14,418.—ABRAHAM STEERS.—*Improvement in Apparatus for making Extracts*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The within described displacing apparatus, in connexion with the application thereto of heating and cooling agents, substantially as herein set forth, viz: The said apparatus being composed of the per-

colater K and the receiver M, separated from each other by means of a perforated diaphragm Q, or its equivalent, the said percolater having its upper end closed by a metallic cover, supplied with an outwardly opening-valve, at the same time that the top of said percolater is connected directly with the said evaporating receiver by means of a pipe supplied with a valve or stop-cock, by which arrangement the contents of said percolater can be operated upon; first by steam generated in the evaporating receiver, and then by the percolation of the menstruum after it has been evaporated and condensed again, substantially as herein set forth.

No. 15,158.—GEORGE F. WILSON and GEORGE PAYNE.—*Improvement in Saponifying Fats*.—Patented June 17, 1856.

The nature of this invention consists of the process of distilling over glycerin, together with the fat acids from neutral or partially neutral fats, the glycerin and fat acids being mixed, but uncombined, so that they will separate when allowed to stand.

By this process the fat acids will be pure, and the glycerin will also be pure, but dissolved in the water resulting from the condensation of the steam passing off with the vapors of the glycerin and of the fat acids.

The inventors say: We are aware that oils and fats have been heated with steam, and that it has been used as a carrier in the still, but they have not been treated in accordance with our process, viz: by steam maintained at about 550° to 600° temperature, above specified, and so as to produce results attained by it. We therefore lay no claim to the process above mentioned of treating oils or neutral fats by heat and artificial pressure, so as to prevent the formation and use of steam or vapor, nor do we claim the common method of treating them by steam in a superheated state; but we *claim* the improved process of treating them, so as to distil over glycerin with fat acids, mixed but uncombined, as herein before explained.

No. 15,517.—IRA HOLMES.—*Improvement in Filtering-Sand for Cider*.—Patented August 12, 1856.

The nature of this invention consists in filtering the juice of apples through a filter consisting of flannel cloth, covered with a certain kind of sand; this consists of silica, alumina, carbonate of lime, black oxyd of iron, titaniferous iron, and peroxyd of iron and has the peculiar quality to convert the acid of the apple juice into saccharine, thus rendering the cider of a superior quality, and adapting it to the manufacture of molasses or syrup.

The inventor says: I do not claim making cider from apples. Nor do I claim simply evaporating cider by boiling.

But I *claim* the described discovery and process for making a beverage and syrup from the juice of apples, as set forth.

No. 16,129.—CHARLES F. THIEME.—*Improved Gas-Cock and Swinging-Joint*.—Patented November 25, 1856.

The plug B being inserted in the barrel A, and the cap B¹ screwed into a cemented connexion with the lower end of the same, the apparatus can be used both as a swing joint and cock. By screwing the key C up to its shoulder, no gas can pass through plug B nor out of barrel A; but when said key is screwed down, the gas can pass through opening *p* into plug B.

Claim.—Making a swinging joint for gas brackets, substantially as described, the same consisting of the tubular plug B and its cap B¹, with the leather washer *k* and spring *i*, or their equivalents, in combination with the barrel A, constructed as set forth and described, so as to produce a gas-tight swing joint without the usual boring and grinding required, as described.

Also, the combination of the key with the lower end of the plug when the same is used as a gas cock, so as to dispense with a distinct barrel heretofore required for a cock, the said key being constructed, combined, and operating substantially in the manner set forth and described.

No. 14,368.—ALPHONSE QUANTIN.—*Improved Method of Bottling Fluids under Gaseous Pressure*.—Patented March 4, 1856.

The end of the cock N is to be inserted in the opening of the bottle stopper. The cock A is opened by means of lever I. This permits the mineral water to enter the tube E, which contains the requisite measure of syrup, and forces it by the cock D, opened by the same motion of A, to enter O and N, which is in the stopper of the bottle, and which fills it instantaneously. The lever M is then turned, which shuts the cock N, gives half a revolution to the cylinder P, and shuts the top part of the stopper and completes the operation.

Claim.—The compound apparatus, composed of metal or other substances, constructed and operating substantially as herein before described, that is, to introduce a certain portion of a liquid into the apparatus, and force it out by the action of another liquid, gaseous or fermented.

No. 15,973.—CHARLES A. HOWARD.—*Gas Generator*.—Patented October 28, 1856.

The operation of this apparatus is as follows: The gas supplied to the burners I is lighted, and when the retorts are properly heated by them, the material from which the gas is to be produced is fed into the upper retort L through the feeding pipe B, and is vaporized by coming in contact with the heated surfaces; and the material which remains undistilled flows down into the lower retorts A and M, where it is distilled, and the gas, as produced, is taken off by the pipe C and conveyed to the gasometer E.

Claim.—The series of inclined retorts, constructed and arranged substantially as described.

No. 14,926.—MAX PETTENKOFER and CARL RULAND.—*Improvement in the Construction of Gas-Generators*.—Patented May 20, 1856.—Bavaria, February 24, 1851.

The retort A containing the vegetable fibre is enclosed within walls forming flues; the gasses pass through pipe E into the upper regenerator B B B, in which the gas is compelled to travel backwards and forwards by dividing plates x x^1 , and from the back end of B into the lowest regenerator B¹, and having traversed it through its chambers, passes off by the exit pipe H to the purifying apparatus.

Claim.—The construction and arrangement of the many-chambered regenerators for making gas from wood or vegetable fibre, whereby the primitive vapors of destructive distillation of wood or vegetable fibre are progressively heated up beyond the heat in the retort.

No. 14,045.—N. AUBIN.—*Improvement in Making Illuminating Gas*.—Patented January 8, 1856.

The nature of this invention consists in generating illuminating gas from rosin, grease, oil, tar, or other such substances, rich in hydrogen and carbon, which are in a liquid form, or become so on being subjected to heat, by mixing the same with coarsely divided charcoal, bricks, &c., which contain no gas and are slow conductors of heat, for the purpose of decomposing the same and to facilitate the withdrawal of the contents after the gas is extracted. The above described mixture is introduced into the vessel E, which is provided with a perforated bottom E¹, which is placed inside the retort B. Water is allowed to drop through the cock a^3 and syphon pipe a^2 into the steam generator D, and as the apparatus is heated by the fire of a fire-place A¹, gas is generated and expelled from the retort through pipe B¹.

Claim.—Mixing the materials from which the gas is to be generated with porous or coarsely divided substances, which are slow conductors of heat, and introducing the mixture into the retort in a vessel with a perforated bottom, so constructed as to compel the contents of the vessel expelled by the heat to escape at the lower end, near to or in contact with the bottom of the retort, where the heat is most intense, substantially as described.

No. 15,267.—CHARLES F. WERNER and CHARLES DEUTSCHMANN.—*Improvement in Dry-Lime Gas Purifiers*.—Patented July 1, 1856.

The gas in passing from the retort through the pipe D is cooled, and all condensable matter is precipitated by the pipe D¹ into the vessel E. The gas enters then pipe F, and escapes therefrom in minute streams into compartment c , where it percolates through the hydrate of lime; it passes then through pipe F¹ into c^1 , after which it escapes by another pipe F² into a third compartment c^2 , from which, after having been for the third time purified by passing through hydrate of lime, it escapes by pipe G to the gasometer.

Claim.—The arrangement of the lime purifier in the same vessel or cooler B with the cooling pipe, when the said cooling pipe is arranged in serpentine form below the purifier, in the manner substantially as herein described.

No. 15,010.—JOHN G. HOCK.—*Improvement in the Arrangement of Gas-Retort Bench.*—Patented June 3, 1856.

This invention consists in an arrangement of flues *a a c d e e f g h i j j k k* in a bench of five retorts $A^1 A^1 A A A^2$, whereby the heated products of combustion are brought into action on the retorts in such a manner as to heat them individually in all their parts and with great uniformity.

Claim.—The within described arrangement of the flues, by which the flame and heated products of combustion are caused to pass first under the bottom retorts $A A$, next under the top retort A^2 , then under the retorts $A^1 A^1$, and over $A A$, and finally over $A^1 A^1$ and A^2 .

No. 14,934.—SAMUEL H. WALKER and MATTHEW C. WALKER.—*Improvement in Gas-Retort Cleaners.*—Patented May 20, 1856.

When the operation of the retort A commences, the part *d* of the handle *c* is detached, and the opening through which the scraper-rod passes closed. When the retort requires scraping, the cap E is taken off, the rod *d* is fastened to the scraper-rod *c*, and the scraper is then pushed into the opposite end of the retort, and the residuum on the bottom is scraped off and drawn through the passage *6* into the box D. The opening *f* through which the rod passes is just large enough to allow the said rod to pass freely through.

Claim.—Providing the retort with a receptacle D below its bottom, and applying in connexion therewith a scraper F arranged and operating substantially as described, to scrape the residuum from the bottom of the retort into the said receptacle without suspending the operation of the retort.

No. 16,075.—WILLIAM H. ST. JOHN.—*Copper-Ring Gas-Retort Fastening.*—Patented November 11, 1856.

The flange I of the retort is provided with a groove into which a corresponding projection of lid M fits, and the groove is lined with copper, to form a more perfect joint than the two surfaces of the same kind of metal can make. The hot air chamber M below the mouth of the retort is supplied with hot air from the flue H, for the purpose as specified in the claim.

The inventor says: I am aware that lead has been used for tightening the joints of boilers; this I do not claim.

But I *claim*, first, the tightening with copper of the joints of doors of gas-retort heads, when the said joint is effected by the otherwise usual

groove inserted in the flange of the mouth-piece, to meet a corresponding projection on the door in the manner and for the purposes specified.

I further claim the placing a hot air chamber beneath the mouth-piece, to consume the tar and oil collecting on the bottom of the latter.

No. 14,913.—JOHN G. HOCK.—*Improvement in Gas-Retort Fastenings.*—Patented May 20, 1856.

To fasten or unfasten the head it is only necessary to bring down the bail D, or to lift it up and throw it back, as shown in dotted lines in fig. 1. When the bail is thrown off the rib *e*, the head remains supported by the lugs *a a* resting on the shanks of the bolts B B, so that the bolts serve not only to attach the bail, but to support the head.

Claim.—The attachment of the bail to the retort or other mouth, by means of the hook-headed bolts B B.

No. 14,996.—N. AUBIN.—*Improvement in Feeding Apparatus for Gas-Retorts.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The vessel H to contain the materials from which the gas is to be made, in combination with the inner vessel or weight J, arranged so as to gradually expel the contents of the vessel H as they are melted or rendered more fluid by the heat of the retort A, and thereby afford a regular supply of said materials to the gas-making process going on in the retort.

No. 15,376.—JAMES HUMPHREY.—*Improvement in Gas Stop-Cocks.*—Patented July 22, 1856.

The gas coming from the supply-pipe and passing up the pipe *c* enters the chamber between it and the cylinder *d*, but is prevented from escaping therefrom as long as the triangular slot *h* is submerged in the mercury *g*; but as soon as the upper part *b* is raised by the pressure of the mercury, the slot *h* will partly be raised above the mercury, and the gas can escape through said passage to the burner, as indicated by the arrows.

Claim.—The mercurial gas cock, constructed with the adjustable slotted cylinder and the reservoir of mercury, arranged and operating substantially as described.

No. 14,814.—HENRY G. TYER and JOHN HELM.—*Improvement in Making Gum-Elastic Cloth.*—Patented May 6, 1856.

The inventors say: We do not claim as our invention the weaving of cloth, or cloth woven with the threads of the weft diagonally to the

threads of the warp, for that was patented by Healey; nor do we claim the stretching of cloth so that the threads of the weft, while held in the stretched condition, shall stand diagonally to the threads of the warp; nor do we claim generally the cementing of threads or sheets of rubber between two pieces of cloth so stretched; nor do we claim any elastic fabric consisting of two pieces of stretched cloth, united in whole or in part by unvulcanizable material.

But we *claim* an elastic fabric composed of two pieces of cloth, either woven with the threads of the weft in a diagonal position to the threads of the warp or of common cloth stretched so as to force the threads into such relative diagonal position, combined and caused to adhere together, exclusively by a vulcanized compound of India rubber or gutta-percha, the two pieces of cloth being first united by the vulcanizable compound and the compound being vulcanized after the union.

No. 14,972.—JAMES REYNOLDS.—*Improvement in Apparatus for Cleaning Gutta Percha*.—Patented May 27, 1856.

The gutta percha is cut into fine slices by means of the rotating disc C, with the cutters *a* fastened to it. The bark and foreign substances may now be extracted with little trouble. The gutta percha is then submitted to the beating or rubbing operation, which is effected by means of the beaters or lifters *c c* within the rotating circular screen H, as shown.

The inventor says: I do not confine myself to the employment of the particular machinery herein described; but I *claim* the extraction of the bark and foreign substances from gutta percha by cutting the blocks of the raw material into extremely thin slices or sheets, and submitting the said slices or sheets to a beating or rubbing and screening operation.

No. 15,439.—JAMES REYNOLDS.—*Improvement in Gutta Percha Apparatus for Covering Wire*.—Patented July 29, 1856.

The operation of this machine for covering telegraph wire is as follows: To prepare for filling the cylinder A with gutta percha, the piston G is run back by turning the gear *f*; the rear end of the cylinder is then raised by turning shaft *d* by a hand crank, and the cylinder is filled with gutta percha. The cylinder then being lowered, the piston is run up close to the charge; the outer ends of the die piece *m* and core piece *n* are then closed by stoppers; the cock *p*¹ is opened and an exhausting apparatus, connected with the cylinder by means of pipe *q*, is set in motion to extract the air which is contained in the material; when all the air is extracted, the cock *r* is closed, and the piston G is run in far enough to pack the whole charge into one compact mass. The stoppers are now removed from the die and core piece, and the cock *p*¹ opened, and the wire to be covered passes through the hole in the core piece and into the die *m*. Motion being communicated to the machine, the piston G moves slowly forward, and the circular trough J, filled

with water, begins to revolve to receive the finished wire. The piston forces the gutta percha through the die *m*; and the gutta percha, in passing through and being compressed in the die, carries with it the wire, drawing it through the core piece as fast as the rope issues from the die.

Claim.—1st. Providing the cylinder, or other vessel in which the gutta percha is submitted to the pressure, with a connexion to an air-pump or other suitable exhausting apparatus, for the purpose described.

2d. The arrangement of the die and core or core piece, transversely to the direction in which works the piston or other device for producing the pressure, substantially as and for the purpose specified.

3d. Providing the stomach *I*, or its equivalent, which contains the die with a variable escape opening *p*, substantially as and for the purpose set forth.

4th. The continuously revolving water trough, arranged relatively to the die, and operating substantially as and for the purpose set forth.

No. 16,215.—JAMES REYNOLDS.—*Mode of Making Gutta Percha Cord.*—Patented December 9, 1856.

The gutta percha cord *G* is inserted between the dies *D*, then passed around the rollers *C* and *C'*, and rotary motion being given to said rollers, the cord is operated upon as described in the claim.

The inventor says: I do not claim as new a mere combination of dies and rollers, as such, variously arranged, is common in the manufacture of metallic tubing and other articles; but I *claim* the process described of finishing gutta percha cord by means of the dies *D D'* and grooved rollers *C C'*, arranged and operating together and on the cord, as described; the said dies being of larger diameter than the grooves in the rollers, and serving to close up flaws, draw and compress the cord and equalize its size, while the smaller grooves in the rollers serve to slightly compress and give a smooth finish to the cord, and establish or sustain the feed of the cord, without risk of bruising by attrition, through a windlass action, as specified, and by which combined action of dies and rollers the cord is stretched to its fixed point between the dies and rollers, as set forth.

No. 15,087.—JAMES REYNOLDS.—*Improvement in Feed Apparatus for Working Gutta Percha.*—Patented June 10, 1856.

The pistons are severally forced out as they approach their highest position, and then descending in contact with the concave, force down the material, thereby producing the necessary pressure to fill the dies. Any material leaking past the pistons into the space *f* is allowed to escape through the shaft *E* by means of the passages *e e e e*.

Claim.—The combination of the rotary forcing apparatus, consisting of a cam *E* for forcing out the sliding piston *D D'*, arranged entirely within the rotating head *C C'*, with a passage or passages within the rotating head which carries the said pistons, providing for leakage, substantially as and for purposes herein described.

No. 14,929.—A. D. PUFFER.—*Improvement in Lining Metal Pipes with Gutta Percha*.—Patented May 20, 1856.

To facilitate the operation of drawing down the leaden pipe, the lead may be sufficiently warmed, by means of hot water, to enable it slightly to soften the gutta percha. The accompanying drawing represents a pipe *a* lined with gutta percha *c*, and the method employed to unite the pipe with the ordinary coupling.

Claim.—The method of lining metallic pipes with gutta percha—the pipe being drawn down upon the lining.

No. 15,086.—JAMES REYNOLDS.—*Improvement in Mandrels for Making Gutta Percha Tubing*.—Patented June 10, 1856.

The shank *f* of the mandrel *F* is formed with an eye *h*, to connect the mandrel with the hooked end *g* of a long rod of iron *G*. This rod *G* is secured at *l*, while the tube is drawn over the mandrel; during which operation, the mandrel serves as a support to the material against the action of the die, and the die as a support against the action of the mandrel, which causes the material to be compressed and condensed.

Claim.—Constructing the mandrel with a joint, as described, and for the purpose as specified.

No. 15,067.—AUSTIN G. DAY.—*Improvement in Cleaning India-Rubber*.—Patented June 10, 1856.

The rubber is first cut into small pieces and worked in water, whereby the largest of the foreign matters are removed. The rubber is then placed in an air-tight cylinder *A*, and the vat *N* is filled with a solution of caustic soda, which is pumped into the vats *E* and *F*. The air-pump is now put in operation, and a partial vacuum produced in the cylinder; thus exhausting the air from the interstices of the rubber, and removing the noxious gases. The caustic alkali is now allowed to flow into *A*, which renders the wood, bark, and other foreign matters heavier. The liquid is now drawn from *A*, through *O*, into *N*; the rubber is then removed from *A*, and thrown into vats containing water, which is so stirred as to allow the heavier parts to sink, while the rubber is left floating upon the surface.

Claim.—The exhaustion of the noxious gases from the crude India-rubber, and its subsequent treatment, for the purpose of cleansing and purifying it.

No. 14,811.—NATHANIEL HAYWARD.—*Process of Preparing Elastic India-Rubber Cloth*.—Patented May 6, 1856.

The inventor says: I wish it distinctly understood that I do not claim the elastic fabrics usually denominated shirred goods, and made of threads or strips of rubber combined with cloth; nor do I claim what are commonly called woven elastic goods; nor do I claim

the mere union of cloth with India-rubber; for this has been done in various ways, without producing an elastic fabric.

But I *claim* the producing an elastic fabric of uniform strength by uniting a sheet of rubber with sheets of cloth thinly coated on one side with a vulcanized compound of rubber; the sheet of rubber before it is united with the sheets of cloth being in the modes set forth so prepared that the central part of it is completely vulcanized, while the surfaces are not.

No. 15,947.—JACOB H. HOWELL.—*Improvement in Making India-Rubber Hose*.—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The herein described method of constructing India-rubber hose—that is to say, by winding a fillet *f* spirally upon a mandrel *c*, and upon this winding a second fillet *g*, which shall cover or break the line of joining the first; the said fillets being made to adhere along their cut edges, as well as to each other, substantially as set forth.

No. 14,657.—NATHANIEL HAYWARD.—*Improvement in Manufacture of India-Rubber*.—Patented April 15, 1856.

This invention consists in the mode of preparing and cementing vulcanized India-rubber fabrics.

The cement is applied to the two pieces in one, two, or three coats, according to the thickness of the coat; after which the whole is exposed to the vulcanizing process.

Claim.—The improved process of cementing and uniting one piece of vulcanized rubber with another piece of rubber, either vulcanized or in a state capable of being vulcanized.

No. 16,069.—T. SAULT.—*Process for Cleaning India-Rubber*.—Patented November 11, 1856.

The India-rubber is cut in slices, and placed into the tank *F*, and a constant stream of water is allowed to flow into it at the same time that it is submitted to the operation of the cylinder *B*, provided with teeth *C*, which pass between the serrated bars *D* of a concave; the India-rubber by this action is liberated from all its impurities, which subside to the bottom of the tank below the bed *F*, which is perforated for their escape.

Claim.—The cleaning of India-rubber by means of the serrated sided teeth *C C* and stationary serrated sided bars *D D*, constructed and arranged to operate in combination with each other, substantially as described.

No. 16,269.—HENRY DAVENPORT.—*Improvement in Machines for Cutting India-Rubber Thread*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of the cylinders or drums B B¹, over which the endless belt of India-rubber, from which the thread is to be cut, is stretched, with the revolving circular cutters E E¹, attached to the table D; the whole arranged, constructed, and operating in the manner described.

No. 15,531.—WILLIAM F. SHAW.—*Improvement in Treating India-Rubber.*—Patented August 12, 1856.

This invention consists in rendering fabrics of India-rubber impervious to illuminating gas, by treating them with linseed oil in a heated state, by which any excess of sulphur contained in the fabric may be combined with the oil to form an elastic compound of oil and sulphur, impervious to air and gases, yet allowing of bending and stretching.

Claim.—The treatment of sulphured rubber or gutta percha with unsulphured drying oils or unsulphured rubber or percha with sulphured drying oils, in the manner set forth.

No. 15,998.—HENRY FORSTRICK.—*Improvement in Working Over Vulcanized India-Rubber.*—Patented October 28, 1856.

Vulcanized India-rubber from which the sulphur is to be extracted is reduced to powder, and then heated with diluted nitric acid, which oxydizes the sulphur into sulphuric acid; the gum is then subjected to the vapors of fusel oil, (grain oil,) and then a small quantity of chloride of calcium is added, when the mass is dried and fit for use, either alone or in combination with native gum.

Claim.—The manner of extracting unorganic matter from vulcanized India-rubber, gutta percha, and other gums, or their compounds, by the application of diluted nitric acid and the use of fusel oil, (grain oil,) either in a heated state, mixed with the gum, or in the shape of vapors, for the restoration of the cleansed gums to the state of cohesion.

No. 15,942.—JOHN J. BATE.—*Improvement in Lard-Rendering Kettles.*—Patented October 21, 1856.

The material to be melted is placed into the double kettle *a* and concentric annular kettle *c*, and steam being admitted through the pipes *f* into the space *b*, the material in said kettles is melted.

Claim.—The combination of the double steam kettle with the annular chamber, substantially in the manner and for the purposes set forth, and covering the exterior of said chamber with a non-conductor.

No. 15,391.—JOHN C. FR. SALOMON.—*Improvement in Liquids used as a Motive Power.*—Patented July 22, 1856.

The nature of this invention consists in the use of sulphoile carbonic acid in combination with carbonic acid as motive power. The sulphoile

carbonic acid is made by a combination of coal tar, oil, and bisulphuret of carbon, decomposed by sulphuric acid.

Claim.—The sulphoil carbonic acid liquid, prepared in the manner substantially as described, and in combination with carbonic acid generated in any known way, or other equivalent liquifiable gas, as a motive power.

No. 14,791.—CLAYTON BROWN, sen'r.—*Improved Apparatus for Lubricating Grist Mill Spindles.*—Patented May 6, 1856.

By turning the piston G the oil will be forced against the spindle C. When the chamber D requires to be filled, the stop-cock F is turned, and the oil in the inner end of the tube E is prevented from flowing back into the chamber D.

Claim.—The oil chamber D, with tube E attached, the tube being provided with a stop-cock F, and the chamber with a piston or follower G, the inner end of the tube passing through the bush B.

No. 16,298.—JOSEPH WELSH.—*Improvement in Lubricating Spindle Steps.*—Patented December 23, 1856.

The oil in the recess *e* passes through the cotton *g* and channel *f*; and as the tube C rotates rapidly on spindle A, its upper bearing surface is also at the same time carried slowly up and down on the spindle, thus lubricating all that part of the spindle over which it moves. The surplus oil passes down the grooves *k* into the groove *h*, thus lubricating the face of step B.

The inventor says: I do not claim introducing the oil through the spindle, directly to the inside of the tube, as set forth and described; nor do I claim anything contained in the patent of E. W. Welch, dated January 28, 1840; nor anything in the application of Joseph Turner and E. S. Webster, rejected, respectively, in 1848 and '49.

I *claim* making the groove or grooves *h*, or their equivalents, at the lower end of the tube E, so as to conduct thereby, during the rotary motion of the said tube, the surplus oil from the spindle A to the horizontal face of the step B, substantially in the manner and for the purpose set forth and described.

No. 15,690.—GEORGE W. DAUGHERTY and THOMAS G. McLAUGHLIN.—*Improvement in Lubricating Throstle Spindles.*—Patented September 9, 1856.

By removing the cap A, together with the parts C and C', from the spindle B, as represented in fig. 3, the valve H is pressed down to its seat, and the oil passes from the reservoir *a*, through the passages *f*, into the chamber G. By replacing the cap to the spindle B, the valve H is raised, as represented in fig. 2, and the oil comes in contact with the upper part of the spindle and runs down the groove *h*, formed in the same, thus causing an effectual lubrication by the necessary act of

removing and replacing the cap, and without having recourse to the tedious operation of stopping and starting the machine every time the lubrication of the spindles is required.

Claim.—The lubrication of throstle spindles, in the manner and for the purpose substantially as described.

No. 14,236.—WILLIAM GEE.—*Lubricator.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I *claim* a glass cylinder H H, as above described, protected by a brass or other metallic cylinder I I, with openings to see the oil, and the tube K, as described, passing up through the oil, which, by radiating its heat derived from the hot steam, keeps the oil in a liquid state under all temperatures.

I also claim the method above described of preventing accidents or the glass breaking, by the elasticity of the India-rubber above and below the edges of the glass lubricator, as packing I¹ I¹ I¹ I¹, as well as the diaphragm of India-rubber P P, as described, the whole in combination as a lubricator, or to supply and regulate the flow of oil, and by sight enable the person attending to know when the oil or lubricating material is exhausted, and by the method herein described. By the diaphragm P P, I do away with the necessity of having grooved metallic surfaces, which are always getting out of order. This lubricator will answer for supplying vacuum by opening the cock X. The air passing up the tube K above the oil, forces the oil out and makes a vacuum lubricator, which I include as a part of my claim.

I do not claim India-rubber as packing, as that has been used by myself as well as others; nor do I claim cutting away the cylinder to see through it, as that has been used by myself as well as others.

But what I do *claim* is, the India-rubber diaphragm P P in combination with double cocks N, and cylinder H H, and tube K, and valve D, handle A, guide B B, with other parts, in combination and operation as set forth in the specification.

No. 14,352.—WILLIAM E. EVERETT.—*Improved Lubricator.*—Patented March 4, 1856.

The oil cup A is stationary, and therefore can be filled properly at any time, however rapid the motion of the part U to be lubricated may be.

The shaft S gives motion to the spoons inside of the oil cup A. When the spoons deliver too much or too little oil, the bolt P can be adjusted in the slots of the arms R and L so as to increase or diminish the motion of shaft S.

Claim.—1st. A stationary oil cup or reservoir A in combination with a flexible tube I K, one of whose ends communicates with the cup, and

the other with the surfaces *U a* to be lubricated, substantially in the manner and for the purpose herein specified.

2d. Giving motion to the spoons of a mechanical oil cup, when it is used, in combination with a flexible tube, by means of a vibrating lever, or its equivalent, which derives its motion from the tube itself, substantially as herein set forth.

No. 14,549.—EDWARD J. BAKER.—*Lubricator*.—Patented April 1, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The combination of the reservoir *A* with the vertical stem or spindle *B* by means of the conical sockets *a* and *b* and bearings in the upper and lower parts of the reservoir, together with the passages or openings *l m p* which are in said sockets or bearings for the admission and discharge of the oil or lubricating fluid, and also for the escape of the air from the reservoir while oil or fluid is being poured into it. The said passages being alternately opened and closed by rotating or moving the reservoir around, or partly around, the central stem or spindle, substantially as described.

No. 14,797.—ABEL BREAR.—*Improved Lubricator*.—Patented May 6, 1856.

The plug *C* is turned so as to bring the passage *b* opposite *C*; the plunger *E* is then drawn outward, which fills the cylinder *D*, and the plug is turned to bring the passage *b* opposite to *d*; by pressing now the plunger *E* inwards, the contents of *D* are forced through the passage *d*.

The inventor says: I do not claim the application of a piston or syringe to a grease cock to force the grease against a pressure of steam.

But I *claim* the attachment of the syringe directly to the plug *C* of the cock.

No. 15,775.—NORMAN W. POMEROY.—*Improved Lubricator*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—So constructing and connecting the disk which forms the bottom of the oil vessel, that, by reason of its curved or waving shape, the central part may be readily pressed inward by the thumb or finger, while its shape will cause it to return to its original position immediately on removing the pressure, when constructed, connected, and made to operate, substantially as described.

No. 16,018.—JAMES F. MONROE.—*Improved Lubricator*.—Patented November 4, 1856.

When the plug E is turned in a certain position by means of handle L, one of the holes through the bottom of the lubricating cup D falls over the hole *b* in the plug E, and the lubricating material flows into the plug E, any steam or air which may remain in the latter passing off through tube G. When the plug is turned again, the holes *a b* are closed, and the hole *h* is made to correspond with the hole *i* in the plate H, and the liquid within the plug E passes down to the steam cylinder.

Claim.—The plate H and plug E, as arranged and combined with each other and with the lubricating cup, for the purpose set forth.

No. 14,163.—ADOLPH C. MOESTUE.—*Improvement in Mastic for Covering Walls*.—Patented January 29, 1856.

The inventor gives the walls two coatings of a solution of rosin soap. Before the second coating is dry, he applies rosin powder to the wet surface. Finally, he applies to the wall a flame by means of a blow-pipe, or otherwise applies heat to the surface, moves the flame slowly over the wall, so as to melt the composition, and thereby produces a bright and hard coat resembling the glazing on stone ware.

The inventor says: I do not claim the application of an alkaline rosin solution, nor do I claim the sprinkling of pulverized substances on painted surfaces, and do not confine myself to any peculiar mode of coating the surface with rosin; but what I *claim*, and desire to secure by letters patent, is, the glazing of surfaces previously coated with rosin, or its equivalent, by a naked flame, in the manner and for the purposes described.

No. 15,553.—GAIL BORDEN, JR.—*Improvement in Concentration of Milk*.—Patented August 19, 1856.

The nature of this invention consists in keeping the new sweet milk to be concentrated in a vacuum vessel C, to keep the milk out of contact with the atmospheric air; and in then concentrating said milk in a vacuum vessel B, to prevent incipient decomposition in the constituent elements of the milk during the process of evaporation.

The inventor says: I am well aware that sugar and various extracts have been and are now concentrated in a vacuum, under a low degree of heat, to prevent discoloration and burning.

I am also aware that scalding milk, to improve its preservative qualities, has been long known, and that it has been kept in hermetically sealed vessels. I do not claim these processes.

I am also aware that William Newton, and many others since, have obtained patents for concentrating milk by various modes of evaporation, and combining it with sugar to render it soluble and preservative. I do not claim this as my discovery or invention.

But I *claim* producing concentrated sweet milk by evaporation in vacuo, substantially as set forth, the same having no sugar or other foreign matter mixed with it.

No. 16,255.—RICHARD SHRODER, assignor to JOHN S. RUSSELL and RICHARD SHRODER and ALEXANDER ANDERSON.—*Improvement in Apparatus for Coal Oil*.—Patented December 16, 1856.

The retort *a* being filled with bituminous coal, and exposed to heat, the distillation of the coal is effected, and the vapors first pass through pipe *l m n o*, where they are condensed to a pure oil, which can be drawn off by means of faucet *r*. As the process progresses, gases begin to escape through pipes *l'* and *l''*, which, being condensed, furnish oils of inferior qualities. By this arrangement, the oils of different qualities are separated at one operation without applying the process of refining.

The inventor says: I do not claim, broadly, the extraction of oil from bituminous coal, excepting in the manner described.

But I *claim* constructing the retort, or generator, with openings at different heights, as shown, for the purpose of obtaining oil of different qualities, as set forth.

No. 15,643.—CUMMINGS CHERRY.—*Improvement in Apparatus for Distilling Crude Oil from Mineral Coal*.—Patented September 2, 1856.

The fresh coal to charge the retort is fed in through the door *g*, the coal being kept up to the height of the bottom of the head-piece *a* by the addition of fresh coal. The coke left after the extraction of the oleaginous vapor sinks to the bottom of the retort, and is drawn out by means of an iron hook from the bottom of the trough *d*; the water in the trough serves to close the lower extremity of the retort, and to condense any gas that may attempt to escape in that direction. From the head *a*, which serves as a receptacle for the oleaginous vapor, a pipe passes to a condenser, where the vapor is condensed into a crude oil.

Claim.—Providing upright retorts for the manufacture of oil from bituminous coal, with a closed top, and an opening at their bottom to be immersed in water, in the manner and for the purpose substantially as described.

No. 15,506.—LUTHER ATWOOD and WILLIAM ATWOOD.—*Improvement in Preparing Oil from Bitumens*.—Patented August 12, 1856.

Bitumens which do not yield paraffine by distillation, such as Trinidad pitch or Barbadoes tar, are freed from volatile matter by the process of distillation, and the product is distilled over again, and the distillate is placed in an agitator and mixed with sulphuric acid. After the subsidence of the acid, the oil is removed to another agitator and treated with a solution of caustic soda; when the foul soda solution has been withdrawn, and the oil has cooled, it is treated with a solution of manganate of soda. The material thus purified must be again distilled until all impure matter is separated and a pure oil is obtained.

The inventors say: We are aware that solid bitumens have been used to produce light naphthas by distillation, and the residuums for cements. Heavy acid oils have also been known as products of their decomposition.

We disclaim the production of such bodies, and confine ourselves to the use, as the basis of our manufacture, of such bitumens as do not produce paraffine, which we decompose by the aid of high temperatures conjoined with chemical agents, so as to obtain a nearly colorless and odorless oil, boiling above 600 degrees Fahrenheit, remaining fluid at 32 degrees, and having a density as high as 0.900, which the above described processes will produce.

We do not claim these processes, although they are the result of a large experience.

We *claim* the manufacture and use of the oil having the characters described from bitumens which do not yield paraffine by distillation.

No. 15,505.—LUTHER ATWOOD and WILLIAM ATWOOD.—*Improvement in the Production of Oil from Cannel Coal*.—Patented August 12, 1856.

The nature of this invention consists in modifying, by chemical processes conjoined with distilling operations, the proximate elements found in the distillates of coals and other bodies which yield paraffine, so as to produce an oleaginous body adapted in a high degree to lubricating purposes. A detailed description of this process would take up too much space to be given here.

The inventors say: We are aware that oils for lubrication have before been obtained from coals, bitumens, and schists, which afford paraffine in distillation, and they have been purified by acids and alkalis. These oils are solutions of paraffine in light oils or eupione, obtained in the first distillations, deriving their density and essential qualities from the paraffine. They do not resemble the heavier, uniform oils, which result from the decompositions and recompositions taking place in the same distillates at high temperatures, aided by chemical agents applied in large quantities at different steps in the manufacture, and we disclaim such oils.

We also disclaim mixed crude products heretofore obtained by distillation from schists, &c., and confine ourselves to a transparent, nearly colorless oil, having its boiling point above 600 degs. Fah., remaining fluid at 32 degs., and of a density above 0.864 at 60 degs., which is formed from coals, bitumens, and other bodies affording paraffine, in their treatment by the above processes.

We *claim* an improved oil, obtained by the processes substantially as set forth, from natural bodies, which, alone or when mixed, afford paraffine in destructive distillation, and which oil possesses the properties described.

No. 14,610.—AUGUSTUS A. HAYES, assignor to GEORGE ASHMAN and CHARLES PHELPS.—*Improvement in Processes for Extracting Oil from Cotton Seed*.—Patented April 8, 1856.

The inventor says: I do not claim any mode of crushing the matured seed, or expressing the oil from the kernels; but I *claim* the maturing

of the cotton seed after it has been separated from the cotton by heat artificially applied, so as to render the husk brittle and easily separable from the kernel.

No. 15,642.—CUMMINGS CHERRY.—*Improvement in Apparatus for Purifying Oil obtained from Mineral Coal.*—Patented September 2, 1856.

The crude oil is subjected to a distillation in the horizontal retort I, and as the vapor rises it is condensed in the copper heads J and L and passes into the receiver P, and thence into the rectifying chamber Q, which is furnished with trays z, on which are placed layers of unslacked lime. The vapor thence passes through a worm e in the second condenser R, and thence into cistern S, where it is mixed with diluted muriatic acid and stirred by means of a paddle Z. When the oil and the acid have been well mixed, the acid is permitted to settle down and the oil is drawn off into the cistern T, where it is well mixed with a weak solution of caustic lime by means of an agitator K; and when the oil has settled down, it is drawn off and pumped into a boiler, where it is exposed to the direct action of steam.

The inventor says: I do not claim any of the individual parts of my apparatus *per se*; but I *claim* the arrangement of the horizontal retorts I I, as combined with the copper heads J and L, of the rectifying chamber Q, of the steam conduits to the oil boiler, and of the agitating apparatus, in the manner and for the purposes described.

No. 15,644.—CUMMINGS CHERRY.—*Improvement in the Preparation of Drying Oil from Oils Extracted from Bituminous Minerals.*—Patented September 2, 1856.

The nature of this invention consists in boiling purified bituminous oil with litharge and common rosin, by which it acquires the requisite drying qualities which adapt it for the use in painting.

The inventor says: I do not claim the admixture of litharge or rosin to vegetable or animal oils in the manufacture of dressing oil.

But I *claim* preparing the oil, and for the purpose specified.

No. 15,418.—SAMUEL DOWNER and JOSHUA MERRITT.—*Improvement in Pyrogenous Lubricating Oils.*—Patented July 29, 1856.

The nature of this invention consists in dissolving caoutchouc, gutta percha, or bitumens, in the oils used for lubricating purposes, by which they assume the properties of fixed oils, and are not liable to evaporate when exposed to a current of air.

The inventors say: We disclaim the use of all mixtures in which caoutchouc is diffused without its chemical state being altered; and we confine the application of our discovery to the improvement of the qualities of the lubricating oils from coals, coal tar, and bitumens solely. Our improvement of these oils depends upon the perfect solution in

them of small portions of bitumens of the elastic kind, caoutchouc, or gutta percha, so as to prevent them from passing off in currents of air at common temperatures without diminishing their lubricating qualities in the slightest degree.

What we *claim* is the improvement of dissolving elastic bitumens, caoutchouc, or gutta percha, in the pyrogenic oils used as lubricators, substantially as set forth.

No. 14,042.—PHILO MARSH, assignor to Himself and SHUBAEL W. HOWLAND.—*Improvement in Treating Oils*.—Patented January 1, 1856.

The oil is introduced into wooden or lead-lined vessels, in which it can be boiled by means of steam-pipes running through them. It is mixed in these vessels with crude pyroligneous acid, in the proportion of a hundred gallons of oil to fifty gallons of crude pyroligneous acid, which latter has been obtained by the destructive distillation of wood. When the oil has been boiled with the pyroligneous acid for about two hours, it is left to cool off; and the pyroligneous acid, being heavier than the oil, settles to the bottom, and can be drawn off for further use.

Claim.—I am aware that acids have heretofore been used for clarifying oils; but my process does not rest in the use of acids alone, nor do I claim such.

What I *claim* for the purpose of defecating oil, is the employment, in manner substantially as above described, of the pyroligneic constituents of crude pyroligneous acid, except the acetic acid.

No. 15,243.—ANDREW LANERGAN.—*Improvement in Disinfecting Pastiles*.—Patented July 1, 1856.

This invention has for its object the manufacture of a permanent and portable form of solid matter, which may be ignited and applied to disinfect the air. The compound is made of—

- 24 ounces of nitrate of baryta.
- 4 ounces of chlorate of potash.
- 6 ounces of oxalate of soda.
- 4 ounces of chloride of barium.
- 1 ounce of oxyd of manganese.
- 2 ounces of shellac.
- 9 ounces of charcoal.

The whole being moistened with a solution of gum alcohol and water, and thoroughly mixed together, is to be moulded into proper forms.

Claim.—A disinfecting pastile or composition, made so as to be capable of being ignited and burned, and while burning to evolve chlorine or hydro-chloric acid gas, either in a free state or so combined or mixed with one or more other gases as to be capable of acting as a disinfecting agent.

No. 15,972.—JOHN ANTHONY GAUSSARDIA.—*Method of Preserving Dead Bodies*.—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—Injecting the body with a mixture of arsenical pyroligneous acid, and then charging it with a current of electricity, for the purposes described, and then filling the coffin in which the body is placed, and which is afterwards hermetically sealed, with an alcoholic mixture of arsenic, together with the oils of cicuta and caryophyllus aromaticus, substantially as described.

No. 14,464.—RICHARD McMULLIN.—*Improvement in Processes for Making Elastic Rubber Cloth*.—Patented March 18, 1856.

The object of this invention is to supersede the necessity of cutting up the sheet rubber into strips, thereby obviating waste of material, economizing time and labor, and producing a fabric of greater beauty, strength, elasticity, and durability from a less quantity of rubber.

Claim.—Rendering vulcanized India-rubber, for the manufacture of shirred goods, adhesive by boiling it in a solution of potash, to remove the sulphur from its surface, thus fitting the sheet of rubber to receive a coat of cement, whereby it is caused to adhere firmly to the cloth or other fabric between which it is placed, in the manner and for the purposes, substantially as herein set forth.

No. 14,457.—EDWARD R. KERNAN.—*Improvement in Processes for Making Transparent Window Shades*.—Patented March 18, 1856.

The material which forms the ground of the fabric is first soaked in a mordant composed of starch and alum water. It is then dried and rolled up upon rollers to make it even and smooth. The paint laid on the cloth is made of the following ingredients:

Chinese Prussian blue.....	2 ounces.
Chrome green.....	6 pounds.
Acetate of lead.....	$\frac{1}{2}$ pound.
Balsam of fir.....	2 ounces.
Copal varnish (No. 1).....	$\frac{1}{2}$ gallon.

The engraving represents the machine used for saturating the material with the paint. A is the paint box; C C are rollers which press the paint into the cloth; D D D D are scrapers.

Claim.—The making of flexible or pliable and semi-transparent oil-cloth for window shades, and other similar purposes, by a series of processes such as are herein described and set forth.

No. 15,950.—TONY PETITJEAN.—*Improvement in Processes for Silvering Mirrors.*—Patented October 21, 1856.

A detailed description of this invention would take up too much space to be given here; the main feature of it will be understood by reference to the claim.

Claim.—The employment of tartaric acid with ammoniacal nitrate of silver, in any manner substantially as described, for the silvering of glass.

No. 15,542.—WILHELM ZIERVOGEL.—*Improvement in Processes for Separating Silver from the Ore.*—Patented August 12, 1856.

The ores are heated in a calcining furnace containing two hearths *b* and *c*, both communicating by an opening *a*, which can be closed and opened, and through which the partly calcined ores can be let down to the lower hearth, where they are exposed to the full heat of the fire, the atmospheric air entering constantly through the doors *i*. When the calcination is finished, the ore is extracted from the furnace; and when cooled it is placed into strainers, and water is guided on to it. The liquid which passes through the filter contains sulphates of silver, of copper, and perhaps other metals; and the metallic silver is formed by placing pieces of copper into said solution, which decompose the sulphate of silver.

Claim.—The application of water or a solution of sulphate of copper slightly impregnated with sulphuric acid instead of lead, quicksilver or salt, hitherto used for this purpose, to the process of separating silver from copper and other ores, rendering thereby this separation easier, shorter, less expensive, and not noxious to the health of the operator.

No. 16,179.—ELIE JOSEPH HAINAUT.—*Process for Mashing Grain.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The described process of mashing the grain or grains enumerated, either separately or combined, as set forth, for the triple purpose of obtaining alcohol, yeast designed to be dried and pressed, and a mash sediment suitable for feeding cattle; the principal feature of which process consists in heating the said grain or grains in the mace-rator by steam applied externally, in the manner described, instead of injecting the steam directly into the mass, as has been heretofore the practice.

No. 15,953.—JOSEPH POLEUX —*Improvement in the Process of Coating Metals with Metals.*—Patented October 21, 1856.

When the articles to be cleansed are immersed in the acid, small particles of spelter are added thereto. The acid acts at once and rapidly on the spelter, holds in solution what it dissolves, and precipitates

a film of it on the minutest portions of the iron surfaces the instant the acid has cleansed them; which film protects such portions of the iron from any further action of the acid while remaining in it.

Claim.—In the process of coating iron ware with metallic alloys, the employment of muriatic, nitric, or sulphuric acid of the ordinary degrees of concentration in commerce, viz: muriatic of 18 deg. Baumé, nitric 38 deg., and sulphuric 66 deg., without diluting them, embracing the solution of the spelter in cleansing acid in the proportion and manner and for the purposes specified; and the passing the cleansed articles directly into the metallic bath without any intermediate treatment whatever.

No. 14,320.—WILLIAM LINCOLN.—*Process of Painting or Varnishing Woven Wire.*—Patented February 26, 1856.

This process gives the article a darker color on one side than what it has on the other, so as to improve the finish of the article.

Claim.—Exposing the wire-work cover or article after having been dipped in the varnish to a powerful blast, or current of air so brought to bear upon it as to pass through and clear its meshes of the liquid varnish, and pile it more on one side of each side of the wires than on the opposite side thereof, in the manner and so as to produce an effect as stated.

No. 15,594.—CHAS. MOORE.—*Improvement in the Process of Preparing Linseed, &c., for Pressing, in Extracting Oil.*—Patented August 19, 1856.

The nature of this invention consists in pressing the pulp of prepared linseed or other seeds into cakes by means of moulds and formers, as represented at O and P, taking care not to press it so hard as to force out the oil, but merely pack it into cakes and make it occupy a smaller space so as to put a greater quantity into a press for one operation, by which a considerable saving in time is effected. By this arrangement, cotton sail-duck bags can be substituted for knit woollen bags, which also affords great saving in the material.

Claim.—The process of extracting oils and other liquids from the pulp of prepared or ground linseed or other seeds or substances. Forming it or them into cakes, by moulding and partially pressing or packing it or them, substantially as described, for the purposes set forth.

No. 16,189.—OBADIAH RICH.—*Process of preparing Tannate of Lime.*—Patented December 9, 1856.—England, December 18, 1854.

To tannate of soda in solution is added a sufficient quantity of chloride of calcium to combine with the tannin; thus chloride of sodium is formed in solution, while tannate of lime is precipitated. After

standing until the precipitate is all deposited at the bottom of the vat, the solution of chloride of sodium is drawn off and the tannate of lime is taken out. It is now to be well washed, dried, and pulverized, and is ready for transportation.

Claim.—The preparation of the tannate of lime, in the manner set forth, for manufacturing or commercial purposes.

No. 15,664.—JOSEPH McCracken.—*Improved Process for Stiffening Hat Bodies.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim.

Claim.—The process of stiffening wool hat bodies by acidulating the hat bodies before applying the stiffening, as a means of graduating and controlling the quantity and depth to which the stiffener can penetrate the body of the felt, in combination with a pearlash solution of shellac for stiffening the "tip" or "crown," and a pearlash and sal soda, combined with a solution of shellac, for stiffening the "brim," substantially as described, and for the purposes set forth.

No. 16,111.—CHARLES BICKELL.—*Process of Treating Feldspar for Manure.*—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The decomposing of feldspar by heating it with lime and phosphate of lime, for the purpose of obtaining potash or soda, either in the caustic or carbonated state, or for the purpose of obtaining a manure, in the manner substantially as described.

No. 15,598.—WILLIAM T. CLOUGH.—*Improvement in Apparatus for Evaporating Salt.*—Patented August 26, 1856.

The metal chambers A being filled with brine, the heated air passes from the grate into the space E, heats the chambers A on the top, and escapes through the flue I. The air in the flue B also becomes heated, and passes through passages c into the chambers A, and thence through the flues F and G to the smoke-stack I, the draught of which has a tendency to draw the hot air together with the steam evaporated from the saline mixture through the flue G to the stack. It is by this arrangement the chambers A containing the saline mixture are heated from above, instead of being heated from below; no incrustation can be formed, but the salt as it crystallizes drops to the bottom, and eventually can be raked into the aprons H.

Claim.—I do not claim the individual parts of the above described apparatus; but I *claim* the apron H, chamber B, and escape flues F F¹, arranged and combined with the pan A A¹ A², in the manner and for the purpose specified.

No. 15,411.—JOHN F. BOYNTON.—*Improvement in Apparatus for Solar Salt Evaporation.*—Patented July 29, 1856.

In the process of solar evaporation the covers B have to be removed from the vats A in fair weather, and then assume the position as indicated in the illustration. The space then occupied by the covers B was lost heretofore; but these covers can also be used for evaporation by conducting the salt water on to them through the troughs c, and letting it flow down into the vats A, during which time a part of the water will evaporate, and the salt will be deposited on the covers B.

Claim.—The use and application of the covers B of the salt vats A for the evaporation of salt water by solar influence, in the manner specified.

No. 14,813.—BENJAMIN L. HOOD and E. P. MONROE.—*Improvement in Salt Evaporators.*—Patented May 6, 1856.

The liquid to be evaporated is introduced through pipe R, and passes to pan E. The fire-box N is run into the cylinder A, and the latter rotated. The heat passes as shown by the dotted arrows. The liquid, in passing through the inner cylinder P, is, to some extent, evaporated thereby before passing to the pan E, where the outer surface of the outer cylinder is constantly effecting evaporation from the portion of the liquid at the top of said pan; the residuum of each partial evaporation effected by this cylinder, being of greater specific gravity than the body of the liquid at the surface of the said pan, at once sinks to such a position as will preserve it in equilibrio, the lighter portion of the liquid remaining at the top of the pan, thus causing the weaker portion of the liquid to be at all times presented to the evaporating surface. In this manner the operation will continue until the desired salt is obtained in the bottom of pan E.

Claim.—The construction of an evaporating apparatus of two concentric rotary cylinders, supplied with liquid heated, and operating as substantially as set forth, to effect evaporation from the weaker portion of the liquid and economize fuel.

No. 15,884 —JAMES L. HUMPHREY.—*Improvement in Salt Evaporators.* Patented October 14, 1856.

By the arrangement of the flues D, blower F, and chimney H, the products of combustion from the furnace B are drawn through the flues D below the surface of the liquid and caused to heat it and produce evaporation, and are then forced back again over its surface, where they produce further evaporation, and charge themselves with the evaporated moisture and carry the same away to the chimney. The scraper K can be drawn along the flues by means of the rods d to remove the crystals deposited upon said flues.

Claim.—1st. The arrangement of the furnace, the closed evaporating vessel, the flues D D, the blower F, and the chimney H, whereby the products of combustion are drawn through the evaporating

vessel below the surface of the liquid to produce evaporation of heat, and afterwards driven in the opposite direction over the surface of the liquid to produce further evaporation and carry off the evaporation to the chimney, substantially as described.

2d. The scraper K fitted to the flues and pipes which pass through the liquid in the evaporating vessel, to operate substantially as set forth.

No. 15,975.—JOHN R. HOPKINS.—*Improvement in Evaporators for Salts.*—Patented October 28, 1856.

In operating the apparatus, as represented in the engraving, the vat P, boiler A, and connecting pipes are charged with the solution, and a fire being kindled in the boiler A, the solution contained in said boiler becomes heated, and a current is thereby produced flowing through the boiler, pipes, and upper division of the vat P. This current is regulated by the stop-cocks *b* and *c* in the pipes B and C. The solvent capacity of the solution forming this current is alternately increased by heat while passing through the boiler, and diminished while passing through the upper division of the vat P, where its volume is expanded over a large surface; and the steam generated in the boiler is allowed to escape into the atmosphere, where its salts are precipitated and gathered by the converging hopper D.

Claim.—The apparatus for the evaporation of solutions whose solvent capacities are increased by application of heat, and diminished by cooling, consisting of a close boiler in combination with one or more vats or reservoirs, arranged substantially in the manner described.

No. 15,432.—CAMPBELL MORFIT.—*Improvement in Soap-Boiling Apparatus.*—Patented July 29, 1856.

The shaft C is mounted in a metallic socket leading to the exhaust pipe; it is provided with tubular arms and coils *r* and *s*, through which the steam passes from the hollow part of the shaft C, and which at the same time serve as a stirring apparatus. The steam escapes through the hollow part at the lower end of shaft C.

Claim.—The combination of the hollow shaft and tubular arms as a mixing, stirring, and heating twirl for dry steam, either in open or closed vessels, as described.

No. 15,980.—GEORGE C. LAWRENCE.—*Improvement in Soap Mixtures.*—Patented October 28, 1856.

Common soap is first boiled in a solution of borax, and when brought to a proper consistence, castor oil and flour are added to the mixture; when these parts are well incorporated, they are cooled, and when stiffened, borax in a pulverized state is added.

The proportions are 100 pounds of soap, 24 pounds of borax, 5 pounds of castor oil, and two pounds of flour.

Claim.—The combination of the soap compound described, with borax in a pulverized or granular state.

No. 15,951.—AUGUSTUS PFALTZ.—*Improvement in Rosin Soaps.*—Patented October 21, 1856.

For every pound of rosin one pint of a solution of soda may be taken; the rosin being melted, the solution of soda is added, and the whole well mixed by the agitator. Full steam being applied, the mass is agitated and the water evaporated, until a piece on cooling becomes solid.

The inventor says: I do not claim rosin soap either alone or mixed with other kinds of soap. I do not claim rosin soap as ordinarily made, by using as much alkali as will dissolve the rosin; nor does my claim extend to any of the compounds of rosin and alkali, which attract moisture.

I *claim* the described mode of producing a solid soap from rosin, viz: by the use, as specified, of an excess of soda or carbonate of soda, so as to form alkaline salts, with the pinic and sylvic acids, which compounds are rendered nearly anhydrous.

No. 15,838.—J. F. BOYNTON.—*Improvement in Soda Fountains.*—Patented October 7, 1856.

The generator being connected with the fountain by an attachment at L, the supercarbonate of soda, with the requisite quantity of water, is introduced through the opening M; the acid is introduced through the tube B into the vessel D. By turning the tube g, by means of a handle attached to the upper end of said tube, the plunger E is caused to descend a short distance into the chamber D, and a portion of the acid which is thereby displaced flows over the outside of the vessel down upon the carbonate beneath. This operation may be repeated until the gas is all liberated from the carbonate beneath, when the drip-valve b is opened to permit the escape of the acid which still remains in the vessel.

Claim.—1st. The described arrangement of the plunger E and vessel D, or any other arrangement substantially equivalent thereto, whereby the acid may be measured and delivered to the other ingredients in determinate quantities, as set forth.

2d. The spring drip-valve b, or its equivalent, whereby the vessel D is entirely emptied of acid after a charge is worked off, as set forth.

No. 16,051.—GUSTAVUS FINCKEN.—*Sugar Draining Apparatus.*—Patented November 11, 1856.

The carriage containing the moulds c is wheeled to the cooler from whence the moulds are to be filled, and moved to bring each of the

moulds in turn under the faucet of the cooler. When the moulds are all filled, the carriage is removed to some convenient locality; and when the sugar in the moulds has sufficiently crystallized, the crank on each shaft E is turned, and the stops *h* are drawn from the moulds to allow the sirup to run from the moulds and to collect in the vessel A.

Claim.—Employment for the reception of the moulds of a wheel-carriage composed of a box or vessel A, with seats *d d* to receive the moulds and a frame D to keep them upright, and with stoppers *h h* so applied within the box or vessel as to enable several to be inserted in or withdrawn from their respective moulds simultaneously by a crank, or its equivalent, at one end or side of the carriage, as described.

No. 15,694.—SAMUEL H. GILMAN.—*Improvement in Pans for Evaporating Sugar.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The evaporator formed by the combination of a train of open boilers N O P Q—the boiler Q to receive the first, and the boiler N to receive the last fire; and each of the boilers in succession presenting an extent of surface to the fire in the reverse ratio of the intensity of the fire, as well as of its (the boiler's) cubic capacity, constructed and arranged substantially as described.

Also, the construction and use of a flue *x*, formed by a series of open boilers N O P Q, and being in a series of sections of its length, divided longitudinally and vertically by water-legs or strata of juice into two or more flues or spaces; the number of flues increasing from one section to the next, as the distance from the furnace increases, and the number of sections into which it is so divided corresponding to the number of boilers in the series, and each section being shorter than the boiler in which it is placed, so as to leave a space between each section where the flue *x* is undivided in its transverse section, substantially as described.

No. 14,717.—SAMUEL H. GILMAN.—*Improvement in Sugar Evaporators.*—Patented April 22, 1856.

The pipes *c* and *b* form an annular steam passage S, through which the steam passes, being condensed on its way by the colder temperature of the liquid in the pan, and falling in the form of water into the water chamber *q*.

Whenever the greater pressure in the steam chamber P forces the water in its reservoir *m* through the syphon pipe *d d*¹ *d*², the action of discharging said water into the main condensed water pipe *n* produces a tendency to a vacuum in the annular space, and thus tends to draw from the condensed water chamber *q* any water that it may contain; and in like manner, if the discharge from the condensed water chamber *q* through the annular space should be the most rapid, its effect in passing the end of the syphon leg *d* would be to form a partial

vacuum in the syphon pipe, and thus draw the water from reservoir *m* in the steam chamber.

Claim.—1st. The treble bottom *g h i*, forming the steam chamber *p* below, and the condensed water chamber *q* above, in connexion with the steam pipes *c*, open at both ends, and fixed into the division plate *h*, and with the evaporating pipes *b* closed at the top and open at the bottom, and fixed into the tube-plate *g*, all combined and for the purposes set forth.

2d. The compensating condensed water syphon pipe *d d' d''*, with one leg *d'* starting from the reservoir *m* in the steam chamber, and passing up through the division *h* and tube-plate *g* into the pan to about one-half the height of the evaporating pipes *b*, then turning down through the tube-plate *g*, and in the same vertical plane with and terminating in and near the lower end of the condensed water pipe *n* of the condensed water chamber *q*.

No. 15,421.—SAMUEL H. GILMAN.—*Improvement in Sugar Evaporators.*—Patented July 29, 1856.

The nature of this invention consists in the arrangement of a train of open kettles L M N O R, set lengthwise in a long kettle B C, which is thus divided into two side kettles, and which by a channel way (figure 3) that leads from the division B into the division C, underlies the train, and forms the sides and bottom of the flues A, passing direct from the furnace under the train of kettles, and by the side kettles B and C and the vertical juice space S, and returning through the flues D and E, and ultimately escaping through the main flue K into the chimney. The kettle C (figure 2) communicates by a pipe S with the central kettle O next to the battery, thus filling this kettle hydrostatically from a large body of assimilated juice. The kettles are provided with troughs I and J, which catch the overflow caused by the brushing of said kettles, and lead the same into the troughs F and G.

Claim.—The combination of the long kettle B C with the train of kettles L M N O R and pipe S, the serpentine channel T U V, and the fire-flues A D E K, in the manner and for the purposes specified.

2d. The combination of the troughs F G H I and J with the train of kettles L M N O R and the long kettle B C, in the manner and for the purposes specified.

No. 14,129.—ARI DAVIS and ASAHEL DAVIS and CHARLES CUNNINGHAM, assignors to ALFRED W. ADAMS, JOSIAH B. RICHARDSON, and GEORGE W. PETTES, and SHERBURNE T. SANBORN.—*Improvement in Hydro-Carbon Vapor Apparatus.*—Patented January 15, 1856.

Hydro-chloric acid is placed in the generator *G*¹, and hydro-carbon is placed upon its surface, as seen at *Y*; the basket *C* is then depressed by means of rod *D*, and the zinc is introduced into the basket; it is then drawn up into the proper position, and the gas-holder *B* inserted. The gas begins to form, and as it passes up through the hydro-carbon

it becomes sufficiently impregnated therewith to burn with a luminous flame, the heat generated by the action of the materials raising the hydro-carbon to the temperature required.

Claim.—Employing the heat set free by the generation of the hydrogen to heat the hydro-carbon used to impregnate the nascent gas, as set forth.

No. 14,135.—DAVID H. KENNEDY.—*Improvement in the Arrangement of Tan Vats.*—Patented January 22, 1856.

The tanning liquor is conducted through pipe K and branch pipes M to the vats of each series, and runs from vat to vat, entering at the bottom through branch pipes L, and passing out at the top of each until it reaches the last, where it is discharged; the branch tubes N communicate through pipe P with the top of one vat and the bottom of the other. Stop-cocks are placed in the pipes M between the branch tubes; the branch tubes N are for the purpose of allowing the liquor to flow out of one vat into the branch pipe, to be conveyed past one or more vats of the series, if desired, and then back into the succeeding vats, to flow on as if it had not thus been interrupted; and in this case the cock of the branch pipe immediately back of the long egress tube N of the vat, and that of the branch pipe immediately in front of the ingress tube of the vat, into which the liquor is to be run, are open; all the intermediate cocks, except those in the tubes from the vat out of which the liquor flows, and to the vat into which it is conducted, being stopped.

Claim.—What I claim as my invention, and desire to secure by letters patent, is the arrangement of a tank, the tan vats, the main supply pipes and their branches, substantially as herein set forth whereby the tanning liquor may be caused to flow regularly through a series of vats, from one to another, without the aid of pumps, and any one or more of the vats may be insulated from the system of circulation, for any required length of time, without impeding a regular circulation of the tanning liquor through the rest.

No. 15,448.—JOSEPH WHARTON.—*Improvement in Apparatus for Purifying White Oxyde of Zinc.*—Patented July 29, 1856.

The nature of this improvement consists in conducting the products of combustion from the furnace A through flues B and C into a vessel D D¹ provided with helical or screw-like passages, having its bottom covered with water. On the surface of this water the products of combustion from the furnaces are forced to impinge a number of times in succession by reason of said helical passages. The impurities are caught by the water and sink to the bottom, and the white oxyde of zinc passes on, and eventually issues pure at the other extremity of the chamber.

Claim.—Cooling white oxyde of zinc, and separating it from impurities, by causing the products of the furnaces to impinge successively upon a surface of water, in the manner substantially as described.

V.—CALORIFICS.

No. 15,155.—JESSE D. WHEELOCK.—*Improvement in Coal-Heating Bakers.*—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The use of the descending flue or tube E in two parts, the one sliding into the other, so that the same can be lengthened or shortened at pleasure for the purpose of passing off the fumes and smoke of the coal burned in the chamber F, in combination with the said chamber F and the perforated bottom H and top D for baking purposes, substantially as shown.

No. 14,386.—LAFAYETTE BLAIR.—*Improved Hot-Blast Apparatus.*—Patented March 11, 1856.

The heated gases are received into the tunnels *b*, and the cold blast through the tube *f*. The cold blast will be diverted in its course by the division plates *d* in the direction of the arrows, as represented in fig. 2; and from the straight form of the tunnels the cleaning is easily accomplished.

Claim.—The tunnels *b*, diaphragms *h i j k l* and *m*, division plate *d*, and casing *e*, arranged and combined as herein described and for the purpose specified.

No. 14,875.—OLIVER L. LAWSON.—*Improvement in Blow-Pipes.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—In combination with the adjustable valve 1 the cylinder, the adjustable cock E in the tube D, so that a regulated blast may be had, whether sharp or mild, substantially in the manner and for the purpose set forth.

No. 15,774.—STEWART B. PALMER.—*Improvement in Blow-Pipes.*—Patented September 23, 1856.

The piston of the pump I is operated by a treadle connected with the rod S, and the wind is forced into the chest E and through the pipe G into chest F, and thence through pipe O into the nozzle P—the chest F serving as a reservoir, from which a continuous stream, equal in velocity, passes through pipe O.

The inventor says: I do not claim separately the pump or the mode of operating the same nor do I claim the arrangement of the nozzle; for these have been used in similar or analogous devices.

But I *claim* the two wind-chests E F, connected by the pipe G, provided with the faucet H, when said chests, thus connected, are arranged and used in connexion with the pump I, reservoir M, wick tubes N N, and nozzle P connected with the pipe O, substantially as described for the purpose specified.

No. 14,403.—HORATIO N. MACOMBER.—*Improved Spirit Blow-Pipe.*—Patented March 11, 1856.

Immediately below the main jet-pipe is another jet-pipe *b*, (the lighting jet-pipe,) with an enlarged mouth, so that the vapor entering the said pipe *b* from the vapor pipe E (which latter connects with the vessel containing the vapor) may be consumed with such little velocity at the discharging mouth, that the flame of said vapor will rise into the current flowing out of the jet *a*. Thus the powerful current of vapor will be maintained, inflamed by means of the said lighting jet.

Claim.—Combining with the vapor jet *a* of a spirit blow-pipe an air jet *f* and a mouth-tube *g*, so applied to said vapor jet that air may be blown from the lungs of a person directly into the inflamed current of said vapor jet, in order to control, elongate, or reduce said current, and increase its heating powers, as specified.

I also claim arranging the air jet concentrically within the vapor jet, in order that the effluent current of air may pass into a hollow tube or stream of vapor and flame.

I also claim combining with each main jet tube a lighting vapor jet tube, arranged so as to operate therewith as specified.

No. 15,633.—JOHN LIBLONG assignor to EDWARD BROWN and JAMES R. CASE.—*Improved Device for Preventing Liquids from Boiling over the Sides of Vessels.*—Patented August 26, 1856.

When the liquid in the stew-pan A rises, it will pass through the opening *d*, in the top of the cap B, and will fall down on the outer side of the cap, and pass again into the stew-pan through spaces *e*, between the lower edge of the cap and the stew-pan. If the liquid rises rapidly, the deflecting plate C directs it downward as the liquid will strike against it. The flanch *c* directs the liquid outward, and towards the edge of the cap.

Claim.—Cap B placed within the vessel A, and constructed and arranged substantially as shown and described, for the purpose set forth.

No. 14,271.—HENRY NEWSHAM.—*Improvement in Caldrons.*—Patented February 12, 1856.

The water in the caldron A almost surrounds the fire arranged below the arch B, and thus heat is economized.

Claim.—Constructing a caldron by giving the bottom thereof an arched form, in the manner described, and for the purposes specified.

No. 14,074.—ABNER WHITELEY.—*Improvement in Candle-Sticks*.—Patented January 8, 1856.

When the candle has burned to an end in the socket *e*, the cup *D* holds the grease which has dropped into it while the candle was burning down, until the flame begins to melt it, when it will flow into socket *e*, through the openings *g*, and to the flame to be burned.

When a new candle is inserted into the candle-stick, (warmed by the burning out of the previous candle,) the slide *C* can be drawn up (see fig. 3) so as to close up the openings *g* and to support the candle; when congealed, the candle is firmly held by the socket *e*, and the slide *C* can be shoved back.

The inventor says: I do not claim a cup or bowl, having three wire springs extending up from the bottom of the same; or a set of metal springs extending up to support the candle-end.

But, 1st. I *claim* the socket *e e*, having the openings *g g*, as described, and for the purpose set forth.

2d. I claim the combination of the socket *e e*, openings *g g*, and slide *C C*, as described, and for the purposes set forth.

No. 14,641.—THOMAS PRIESTLEY, assignor to DANIEL HOLDEN.—*Improvement in Oil Cans*.—Patented April 8, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—Combining with the oil vessel *A*, and arranging with respect to the discharging tube *B* thereof, a weight *C*, whereby, when said oil vessel is overset, the gravitating power of the weight may move the discharge tube into a position from whence no fluid or oil may escape from it.

I also claim arranging the air inlet-tube *D*, so that its openings into the air vessel, and its openings *c* for the reception of air, shall be on opposite sides of the axis of the vessel, or with respect to the weight and oil discharge tube, essentially as specified.

No. 15,986.—JAMES M. THOMPSON.—*Improvement in Oil Cans*.—Patented October 28, 1856.

The reservoir *A* is filled with oil at the cup *e* by unscrewing the spout *E*; and when the can is inverted, the oil will be discharged through the spout *E*, air passing into the chamber through the tube *D*, and thence into tube *C*, to fill the space left by the escape of the oil through the spout.

The inventor says: I do not claim arranging a chamber at or under the bottom of a can, and having a tube to extend therefrom through the oil can and into its spout, the said chamber having an air-tube passing transversely into it, or instead thereof, being connected with the oil reservoir and the tube by valve openings provided with valves,

as these contrivances or oil cans have had no drip or catching cup or recess to catch the oil which may flow down outside of the discharging spout; whereas my improved oil can is provided with such cup, and it makes an element or part of its combination.

Nor do I claim that combination and arrangement of a catching cup or recess, a chamber and, two tubes, with the oil reservoir and discharging spout of an oil can, as the whole is explained and represented in letters patent granted to me.

But I *claim* my described improved arrangement of oil-catching cup or recess *e*, tube D, chamber B, tube C, reservoir A, and discharge tube E, the same being productive of advantages, as stated.

No. 15,206.—SETH E. WINSLOW.—*Improvement in Safety Cans for Burning Fluids*.—Patented June 24 1856.

The conical form of the strainer for excluding the flame from the vessel allows the lamp to be filled easily, and its being placed above the fluid prevents chemical corrosion from taking place.

The inventor says: I do not claim the wire-cloth strainer placed at the mouth or opening of cans, or at the bottom of the spout of cans, or a long tube of wire cloth extending to the bottom of a lamp, or as forming part of said tube, for this use of it has been made by others.

But I *claim* the conical form of the wire-cloth strainer A, with a small aperture B at its apex or side, which may be adapted to the lower part of the lamp tops and to cans; and I do hereby disclaim any application of said conical strainer to the caps of a lamp with an orifice in said cap through which the lamp may be filled.

No. 14,619.—SANDFORD S. PERRY.—*Improvement in Charring Wood*.—Patented April 8, 1856.

The kiln D is constructed so as to be as nearly air-tight as possible. The furnace A contains iron pipes for the purpose of heating the air to be introduced into the kiln. The cold air is exhausted from the bottom of the kiln either by means of the fan E or the chimney G.

As soon as the process of charring the wood by means of the heated air is completed, the apertures leading from the flue into the kiln and from the kiln into the fan are to be stopped until the kiln is entirely cooled.

Claim.—The process or mode of charring wood, or, as it is commonly called, "burning charcoal," by the application of hot or heated air to the wood to be charred, as above described.

No. 15,726.—WILLIAM BROWNELL.—*Improved Chimney Cap*.—Patented September 16, 1856.

The shaft A is contracted at its upper end so as to form a conical top B, which is surrounded by another conical cap C, which is covered

and provided with a number of ventilating holes *b*, arranged in such a manner that the water passing through these holes cannot enter the conical top B. Another series of holes *a* is arranged in the bottom of the cap C, through which the air can pass up and down, and which allows any water coming in through the apertures *b* to escape.

Claim.—The described construction and arrangement of the ventilator, for the purposes specified.

No. 15,536.—GEORGE W. THATCHER.—*Improved Chimney Cowl.*—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The introduction of one or more central tubes, with their caps or frustums enclosed within an outer tube with its cap or frustum, and extending downwards within the outer tube, so as to increase the upward draught and afford protection from winds and storms.

No. 15,916.—THOMAS W. CHATFIELD.—*Improved Chimney Cowl.*—Patented October 14, 1856.

The nature of this invention consists in the arrangement of two inverted funnels B and D and a short cylinder C, in place of ordinary cones, for the purpose of creating a more powerful current of air between the body of the ventilator and the inverted funnels than can be effected by the use of ventilators constructed according to the various other modes now in use.

The inventor says: I am aware that a patent was granted to Braer & Simonds, June 13, 1854, as also one patent to F. Emerson, July 3, 1847, as well as other patents and rejected applications, wherein the use of cones is described, which I do not claim.

But I *claim* the improvements I have made upon said patents and rejected applications, by the use of two inverted funnels B B and D D, together with the short cylinder C C, arranged as described.

No. 15,584.—CHARLES H. WATKINS.—*Improved Self-Clearing Chimney Cowl.*—Patented August 19, 1856.

The revolving top B resting on spindle C¹ is turned by action of the wind on vane E, and causes the parts C C of the bolted legs H H to rub against the rounded part of the revolving top B and keep it clear of soot or other substances that may collect inside the revolving top B.

Claim.—One or more legs H H, having the circle of the revolving top B, and connected with a common spindle C¹, as described and set forth.

No. 14,171.—CHARLES F. THOMAS.—*Improved Chimney Cowls*.—Patented January 29, 1856.

The object of the first part of the claim is to divide the effluent current of smoke into two currents, so that when part of the smoke is suddenly blown back into the cowl it will pass out of the protected half of the open end of the cowl. The object of the second part of the claim is to maintain the cowl more steady. The object of the last part of the claim is to strengthen the wing and prevent it from being bent by the wind.

The inventor says: I do not claim a turning cowl, applied to the top of a chimney or flue and having a wind-vane attached to it; but I *claim* arranging the vane so that it shall extend directly across the discharging aperture of the cowl or ventilator and divide such aperture, in manner and for the purpose hereinbefore explained.

Also, constructing the vane of two wings flaring from one another as they extend from the cowl, as specified, the same being for the object or objects as hereinbefore stated.

Also, arranging each of the wings so that it shall extend down below the discharging aperture of the cowl, and from and around the external surface of the cowl, substantially as described.

No. 16,246.—PATRICK MIHAN.—*Improved Chimney Cowls*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

The inventor says: I do not claim surrounding the main flue of a chimney with an air flue, whereby air may be thrown upward between the two, and over or above the discharging or upper end of the smoke flue, in order to promote the draught. Nor do I claim arranging an inverted cone in or above the discharging end of a smoke flue.

I *claim* the arrangement of hollow frusta B C with respect to each other a smoke flue A, and an inverted cone deflector D, placed at and in the upper end of said smoke flue A, as set forth.

I also claim arranging on the flat top surface of the deflector D, as described, an enclosing deflecting guard E and a discharge spout F, the same being disposed so as not only to gather the water which may fall on the top of the cone and discharge it in one stream upon the inner surface of the upper external frustum B, but so that the guard may serve to deflect, as described, a current of air, which may strike on the top of the cone D.

I do not claim providing a ventilator or chimney cap, with a cap plate, elevated on columns or rods extending above the rest of the cap or ventilator.

I claim providing the cap plate G, when it is directly over the conical deflector, with an opening, while the remainder of the cap plate may extend over the opening between the cone D and the outer cone B, as described, the same being to allow air to pass through the cap plate and impinge on the top surface of the cone D, in manner and for the purpose as described.

No. 15,458.—THEODORE F. ENGLEBRECHT, assignor to himself and THOMAS C. NYE.—*Improvement in Chimney Dampers*.—Patented July 29, 1856.

The nature of this invention consists in suspending conical deflectors centrally in the perforations of perforated dampers in fire-places, which will cause a greater share of the heat from the gaseous products to be deflected into the room than would be the case by not using said deflectors.

Claim.—In perforated dampers for anthracite coal grates, the supplemental perforations consisting of the suspended conical deflectors, as set forth.

No. 15,645.—HEZEKIAH CHASE.—*Improved Apparatus for arresting Carbon in Chimneys*.—Patented September 2, 1856.

The pipe D being filled with water from a reservoir, said water passes through box E, and eventually through the jet pipes F, and is thrown in numerous jets into the chimney A. In falling down, the greater part of the water is collected on the deflector C, and runs down from it in a thin circular sheet, and into the reservoir B. The smoke in passing up the chimney strikes against the deflector, comes in contact with the sheet of water running from the deflector, the volatile parts of the smoke are condensed, and the carbon is precipitated into the reservoir B.

The inventor says: I do not claim the introduction of jets of water into a chimney for the purpose of arresting sparks or carbonaceous matter, as I am aware that such has been accomplished before on the chimneys of locomotive engines. My invention is more properly an improvement on that for which letters patent were granted June 19, 1847, to James A. Cutting and George Butterfield, of Boston, Massachusetts. The most essential feature of my improvement, and that which differs from anything in the apparatus of Cutting and Butterfield, being that part of my device whose office is to produce a thin sheet of water close to and surrounding the edge of a meniscus deflector placed over the mouth of the discharging flue within the chimney. Nothing of this kind is found in the invention of Cutting and Butterfield, wherein streams of water only are employed. In my improved smoke-consuming apparatus I use streams and a deflector, as do Cutting and Butterfield; but in addition to the principle common to both, I so arrange the jet pipes that the jets of water may fall on the top of the deflector and be discharged over its edge in a thin sheet.

I *claim* arranging the jet pipes, the deflector, and discharge flue, so that the water may first fall on the top of the deflector and be discharged in a thin sheet over its edge and around the mouth of the discharge flue, as set forth; and this whether the streams fall directly downward from the jet pipes and upon the deflector, or whether they may be first discharged upward, and next be caused to fall back and upon the top of the deflector; and so that such streams may serve not only to arrest carbonaceous matters which may escape or pass by and

rise above the deflector, but to return them and cause them to be thrown into the receiver B after they have fallen with the streams upon the said deflector.

No. 14,650.—JACOB COHEN.—*Improvement in the Arrangement of Grates and Dampers for Chimneys*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I am aware that dampers are of common use in smoke-stacks to furnaces, steam-boilers, and stoves, suspended centrally so that they may entirely cut off the escape passage, or limit that passage equally on both sides of the damper; and I do not, therefore, claim the centrally suspended damper.

I am also aware that dampers are in common use in chimneys where grates for burning anthracite and other coals are used, such dampers being limited, however, to the closing of one portion of the escape passage, or diminishing only the half of that passage; and I do not, therefore, claim arranging dampers in chimneys where grates are used.

But I *claim* the arrangement of the centrally suspended damper C in relation to the grate B and the surfaces of the escape passage into the chimney, as herein set forth.

No. 15,779.—JOSIAH A. ROYCE.—*Self-Regulating Draught for Chimney Tops*.—Patented September 23, 1856.

The nature of the invention will be understood by reference to the claim and engraving.

Claim.—The application to the top of a chimney A, or draught flue, of a frame B, having one or more turning slats or dampers C hung in it; said frame being provided with a rudder F, so as to be always turned to the proper position by the action of the wind; and the dampers being combined with a spring mast D, with sail on top, so as to be closed more or less by the action of the wind, and automatically opened during a calm, substantially as and for the purpose set forth.

No. 15,519.—CYRUS F. KNEELAND.—*Improvement in Coal-Hods*.—Patented August 12, 1856.

This invention consists in covering the wooden bottom E of a coal-hod with sheet metal D, which is turned down at the edges over the wood, and kept from rising from its place by the lugs F fastened to the wood. The bottom is kept in its place upon a clinch by nails H and J passing through the sides of the hod, which are themselves secured from working out by a band I around the joint which covers the heads of said nails.

Claim.—I do not claim the combination of wood and iron or other metal in any construction whatever; but I *claim* a coal-hod with a wood and metal bottom made and secured in its place, substantially in the manner as set forth.

No. 14,828.—GEORGE PIERCE.—*Improvement in Cooking Apparatus.*—Patented May 6, 1856.

The nature of this invention consists in combining the stove, as shown in the engravings, with the roaster *a*, which has been patented by Samuel Pierce, on the 12th day of July, 1838, by which combination the top radiating heat is employed for the purpose of baking.

Claim.—The employment of the double oven, arranged and combined with the roasting apparatus, substantially as herein set forth, and for the purposes described.

No. 16,112.—THOMAS G. CLINTON.—*Improved Alcohol Cooking Apparatus.*—Patented November 25, 1856.

O represents a cup which contains the alcohol chamber A, and the wick chamber I containing the wick. When the latter is lighted a draught of air passes through apertures D and central draught tube K L, at the same time that another current passes through the passage G F, thus producing an intense heat. The flame can be extinguished by closing the apertures D.

The inventor says: I do not confine myself to the arrangement of the parts E D C G, as shown, because these parts may be arranged otherwise to do the very same duties.

I *claim* an alcohol burner, arranged in its several parts substantially as described and represented, or in any equivalent manner, for the purposes and effects set forth, irrespective of the method by which alcohol is supplied to the chambers A and I.

I also claim the internal pipe B, or its equivalent, arranged as described in relation to the tube H, and for the purpose and effect set forth.

No. 15 156.—EDWARD WHITELEY.—*Improvement in Water-Heaters surrounding Fire-Pots of Cooking Apparatus.*—Patented June 17, 1856.

A diagonal partition O is placed between the openings of the pipes K and L into the heater, whereby the water that enters at the pipe K is forced to traverse round the entire heater in contact with the heated corrugated surface E of the heater before it can escape by the pipe L.

Claim.—1st. The diagonal partition O between the pipes K and L, operating in the manner and for the purpose specified.

2d. The inclined roof of the heater for the purpose of expelling the air therefrom, in the manner substantially as described.

No. 14,622.—EDWARD WHITELEY.—*Improvement in Boilers for Cooking by Steam.*—Patented April 8, 1856.

E is a depression in the bottom of the vessel B, into which rises the tube F, the top of which is surrounded by and covered with the cap G, thus forming a trap which permits the water of condensation to pass,

but not the steam. When the boiler is to be used for the purpose of heating water, the trap G is removed, and the pipe F is closed by the cap I.

Claim.—The trap G and cap I, as arranged and applied to the vessel B, whereby the latter may be employed either as a boiler or a steamer, as set forth.

No. 14,340.—W. W. ALBRO.—*Improved Apparatus for Cooking with Quick-Lime*—Patented March 4, 1856.

Coffee may be made between the two vessels A C; meat and vegetables are placed within the vessel D; I represents the quick-lime. Water is then poured through tube F, which falls through the perforated tube G in a shower upon the quick-lime, and the heat evolved by the slaking of the lime cooks the articles in vessel D and boils the coffee.

Claim.—The apparatus or device formed of the vessels A C D, constructed or arranged substantially as shown and described for the purpose specified.

No. 14,510.—AZEL S. LYMAN.—*Improved Method of Cooling and Ventilating Rooms, &c.*—Patented March 25, 1856.

The object of this arrangement is the production of a blast or current of cool air without mechanical aid, the air descending in the tube F with a velocity due to the difference of temperature at B and E.

Claim.—The combination of a condensing conduit F, or cold-air flue, with a reservoir D for containing cooling materials, substantially in the manner and for the purposes described.

No. 16,010.—PETER C. GUIOU.—*Improved Cowl or Draught-Accelerator for Steamers.*—Patented November 4, 1856.

The conical tube A is inserted into the horizontal flue C, the jacket B slipping over said flue; when the steamer or locomotive is in motion, a draught of air will pass through the tube A and flue C; this current, as it passes out at the smaller end of tube A, produces a suction and strong draught in the lower upright chimney D, causing a steady draught through the furnace of the steam boiler. When the steamer or locomotive is stationary, the smoke from the perpendicular flue B passes around the conical tube A and out of the opening E.

The inventor says: I do not claim any of the several devices, surfaces, or parts described, separately.

But I *claim* their combination constructively, in the manner and for the purposes described and shown.

No. 14,181.—SOLOMON BERNHEISEL.—*Improvement in Corn-Dryers.*—Patented February 5, 1856.

This improvement consists in bringing the heated air from the furnace in contact with a stream of shelled corn, passing down pipes fur-

nished with perforations, so that moisture in the grain (in the form of steam) may be passed by pipes exterior and interior to the aforesaid pipes as well as through the stream of corn.

Claim.—The perforated pipes Nos. 2 and 3, in combination with the hopper F, placed above the hot-air chamber A, as described, so as to allow the air to pass between the inner perforated pipe and the smoke-pipe No. 1, while the hot air from chamber D passes up between the outer perforated pipe and the exterior pipe or casing No. 4, substantially in the manner and for the purposes set forth.

No. 14,494.—CHARLES W. DAVIS.—*Improvement in Fruit or Grain Dryers.*—Patented March 25, 1856.

The rim C forms a parabolic curve, in order to carry back the fruit forced up the inclined sides of the rotating earthen cone D. The top or rim C may be taken off by simply unscrewing it. The pipes G G, together with the stove S, keep the cone hot.

The inventor says: I do not claim the separate parts of the above apparatus as my invention; but I believe their combination, as applied for the purpose of drying fruit or grain, to be novel and useful.

I *claim* the inverted earthen cone D, (fig. 2,) having an adjustable parabolic rim C, with or without the hoop F, operating substantially as described, and for the purposes specified.

No. 14,259.—JOHN C. PEDRICK.—*Improved Apparatus for Drying Grain in the mass.*—Patented December 16, 1856.

In using this apparatus, the lenticular-shaped vessel B¹ is thrust into the midst of that part of the grain which is found to be heating, or which has become wet, and an exhausting apparatus being applied to its mouth, the foul air is abstracted from the grain.

Claim.—The double convex lenticular vessel, or perforated exhaust chamber B¹, or its equivalent, constructed and operated as set forth, for drying grain in bulk, in granaries or in vessels.

No. 14,688.—STEPHEN V. APPLEBY.—*Improvement in Machines for Drying Wet Grain, &c.*—Patented April 8, 1856.

n m n¹ m¹ are plates fastened to the side of the walls W W, and covering the ends of the cylinders partly up for the purpose of preventing in some measure the free passage of cold air through the heated cylinders. *p p¹ p²* are openings, covered with wire gauze, to allow the air and vapor to escape. *g g g¹ g¹ g¹* are gratings to increase the distance the grain has to fall. *h h¹ h²* are gratings to lead the grain into the cylinders. P P¹ are pipes which conduct the cold air into the flues.

Claim.—The application of revolving cylinders A A¹ A² A³, situated in a heated flue X, with their ends projecting into flues Z¹ Z² Z³ Z⁴, into which cold air is forced, and so arranged that grain or other similar substances put into the top cylinder will slide through the same, and then fall into the next cylinder, and so on from one to the other, being,

in its passage, alternately subjected to the action of heat while in the cylinder, and to the action of cold air while falling from one cylinder into the other.

No. 15,331.—SAMUEL M. ECHOLS.—*Improvement in Fire-backs of Fireplaces.*—Patented July 15, 1856.

The nature of this invention consists in the employment of a back-piece B in the fireplace F, said back-piece swelling towards the front, similar to two logs placed one upon the other, for the purpose of throwing out heat and economizing fuel.

Claim.—The arrangement in the chimney before the back plate *a* of the removable double cylinder and plane fire-back B.

No. 15,089.—DAVID RUSSELL.—*Improved Method of Applying Horse Power to Fire Engines.*—Patented June 10, 1856.

Horse power being applied to the end L of shaft J, the latter is rotated by means of the friction between the roller 3 and track A; friction being produced by the weight of fly-wheel M. A reciprocating motion is thus given to the piston rods *r r r r* of the pumps *d d d d* by means of the devices, as clearly shown in the engravings.

The inventor says: I disclaim the several elements composing my engine separately considered. But I *claim* the arrangement of the series of pumps *d d d d* with the circular trainway A, and the mechanical devices actuating the pistons, substantially as and for the purposes set forth.

No. 14,447.—CALVIN DODGE.—*Improvement in Fireplaces.*—Patented March 18, 1856.

The claim and engraving sufficiently explain the nature of this improvement.

I do not claim the contracting of the vent or throat of the chimney, as that is well known as a device; but I *claim* the use of a deep recess A B C D, or chamber, placed back of the fire-basket L of the grate, and out of the reach of the draft, in combination with the horizontal covering F over the recess and fire-basket, extending down below the mouth of the chimney, constructed and arranged substantially as hereinbefore described, for the purpose of consuming the smoke and causing the ignition of the gas which would otherwise be lost, and thus increasing the amount of heat thrown into the room, and by the slow combustion of the fire effecting a great saving of fuel.

No. 15,362.—JOHN W. TRUSLOW.—*Improvement in Fenders for Fireplaces.*—Patented July 15, 1856.

A represents a jointed or hinged tender, hung upon hinges at B, in a recess D. The spring E is attached to the back wall of the recess for

the purpose of pressing out the fender when wanted, the sliding panel F covers the fender and recess when the panel is down. By this arrangement the fenders are always convenient for use when wanted, and can be secreted so as not to be observed when out of use.

Claim.—The hinged folded screen or fender within the recess in the jambs, in combination with the spring in rear of the screen, and the sliding panel in front of the same.

No. 14,252.—LEA PUSEY.—*Improved Method of Extinguishing Fires.*—Patented February 12, 1856.

The water-spout A, descending from the roof D of a building, is made of sufficient thickness of metal to resist the water pressure, and is furnished at top and bottom, and, if desired, at every story of the building, with coupling-joints for hose attachment. The couplings B at every story are provided with caps to be used when the coupling-joint is not required.

Claim.—The adaptation of the water-spouts of buildings to the purpose by means substantially the same as those herein described.

No. 15,271.—ROBERT B. ARMITAGE.—*Improved Method of Extinguishing Fires.*—Patented July 8, 1856.

A main-pipe A for the supply of water extends from the ground to the top of the building. From this main-pipe, and at right angles to it, at a point level with the ceiling of the room, the branch-pipe B proceeds to a central part of the ceiling. From the terminus of the pipe B the arms C extend across the middle line of the ceiling, and terminate by a series of jets $y^1 y^2 y^3$, &c. The valve D is placed in the branch B and regulated by a weighted lever E, which is supported by a continuous cord $x x^1 x^2 x^3$, &c., running through staples around and across the ceiling, which cord is made of combustible material; and, in case of fire, the cord is easily burned, when the lever E at once falls and opens the valve D, and the water will escape through the jets $y^1 y^2$, &c.

The inventor says: I do not claim the cords and lever or the valve, they having been long in use for other purposes; but I *claim* the arrangement of the main-pipe, with the branch-pipe, the arms, and jets, which, in connexion with the cords and lever combined, operate as a self-acting fire extinguisher, substantially as herein described.

No. 15,688.—ROBERT COURTNEY.—*Improvement in Artificial Fuel.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The rendering coal dust or screenings into merchantable

artificial fuel, by combining coal dust with clay, lime, and coal tar, or other bituminous or resinous material, and subjecting them to all the parts of the process, in the manner and form set forth and described.

No. 14,063.—JOHN F. MANAHAN.—*Improved Mode of Burning Wet Fuel*.—Patented January 8, 1856; antedated July 8, 1855.

The nature of this invention will be understood by reference to the claim.

Claim.—The method of producing from wet vegetable matter a useful fuel by mixing it with coal tar or other fluid bituminous matter of like character.

No. 14,908.—J. JOSEPH EAGLETON.—*Improvement in Annealing Furnace*.—Patented May 20, 1856.

Within the interior wall of the annular chamber B there is a space C in which an iron cylinder *c* is placed, resting on a flanch *f*, and from this flanch extends a projection *g*, which fits to the cup *m*. When the cup *m* is brought up and shuts over the projection *g* the plate *i* will be within the cylinder and a double bottom be thus formed. The cup *m* is supported on a pillar O, by which it is raised and lowered. The cup *m* receives the wire to be heated and annealed. The cup *m* is then lowered, the truck is brought into place, and the wire hauled off to cool, while at the same time another charge on a similar disk *i* is brought upon the cup charged with cold wire coils, and is at once raised into the furnace, which retains its full heat.

Claim.—Charging and discharging an annealing furnace in bulk by the means herein described.

No. 14,008.—PHILO BROWN.—*Improvement in Furnace for Soldering*.—Patented January 1, 1856.

The pipes to be soldered are laid into the brazing chamber *i*, which is open at each end, as shown in fig. 2, so that the tubes can be inserted at one end and passed through as the brazing progresses. If the seam of a tube is to be brazed on the outside, the soldering is put on the seam and the tube is inserted in the brazing chamber with seam uppermost. The opening *l* leading to the brazing chamber is then closed and the one *g* opened which admits the products of combustion into the upper part of the chamber *i*, and the damper *m* is pushed to close the apertures *k k* at the top of the chamber, and the damper *o* to open the apertures *l l* at the bottom, thus conducting the heat to that part of the tube only which is to be soldered without overheating any other parts. By a similar change in the position of the valves and dampers the heat can be conducted to the lower part of the soldering chamber without heating the upper part of it.

Claim.—I wish it to be understood that I do not claim broadly the

construction or use of a furnace for brazing or soldering metallic tubes, consisting of a brazing or soldering chamber or passage interposed between the fire-chamber and chimney-flue.

What I claim as my invention and desire to secure by letters patent is, combining the brazing or soldering chamber with the fire chamber, and chimney interposed between the two, when the said brazing or soldering chamber communicates with the fire chamber by means of one or more apertures at or near the top, and one or more apertures at or near the bottom, governed by dampers or equivalents therefor, substantially as and for the purpose specified.

No. 14,153.—GEORGE R. COMSTOCK.—*Improvement in Locomotive Furnace-Grates*.—Patented January 29, 1856.

When the apparatus is not designed to be used, the lever *l* has the position shown in figure 1, and the running of the engine does not communicate motion to the apparatus. But when by the movement of lever *l* the stop *i* is placed in position as in figure 2, then the reciprocation of the side plates *C C'* is produced, causing the rising of grate *B*—(by means of the vertical slots *d* in the frame, and the oblique slots *e* in the side plates, through which slots the grate-rods *c* pass)—see figure 4, and causing the opening of the two cocks of pipes *F* and *G*, and the simultaneous close of the same, with the fall of the grate. The object of the pipes *F* and *G* (the one communicating with the upper, and the other with the bottom part of the boiler *H*) is to admit steam and moisture into the furnace at the time of opening the fuel.

The inventor says: I am aware that grate-frames, with numerous vertically moving fingers to stir and clear the fires of locomotives, have been used by Nichols & Boyes, as shown in their patents of 1850, I therefore make no claim to the device of the moving grate; neither do I claim of themselves the eccentrics or rods by which the slides are moved.

But I *claim* the simultaneous raising of the grate *B* and opening of pipes *F* and *G* at will for aiding the combustion of fuel in the furnace during the running of the engine, by the combination of reciprocating plates *C C'* and stop rod *i*, and parts connected therewith, or devices equivalent thereto.

No. 16,287.—JOHN H. H. PERKINS.—*Improvement in Hot-Air Furnace*.—Patented December 23, 1856.

The coils of pipe *L M N* are enclosed within the hot air chamber *A*; the cold air enters said pipes from outside through the tubes *i* and *k*; the chamber *A* contains a furnace *D*, on which is placed a reservoir of water *e* for generating steam; the steam and hot air in the chamber *A* warm the air in the pipes *L M N*, which then escapes through the pipes *R S T* to the rooms to be warmed.

The inventor says: I do not claim the superheating of steam, as this has been done before for other purposes.

I *claim* the mode of heating air for warming purposes, by passing it through the hot air chamber, in close sub-chambers and pipes, the main chamber being filled with air and steam, commingled and heated by the furnace or stove, substantially in the manner described.

No. 15,832.—RICHARD WELLS. *Improvement in Furnaces.*—Patented September 30, 1856.

This invention consists in placing between the outer surface of the supporting plates C and the nuts *b* of the tie-rods D strong springs S, for the purpose of preventing the pressure against the masonry from being relaxed by expansion of the tie-rods, and for preventing the pressure due to the expansion of masonry from rupturing the supporting plates C.

Claim.—In the construction of furnaces, the introduction of springs between the supporting plates and the fastenings of the tie-rods, substantially as and for the purposes set forth.

No. 15,613.—JOHN LIDDLE.—*Improvement in Air-Heating Furnaces.*—Patented August 26, 1856

The construction of this furnace will be understood by reference to the drawings. The air rising from the sides of the main body B of the furnace, which is deflected by the lower surface of the radiator-ring E, is warmer than the ring-radiator itself, and would, consequently, lose a part of its caloric. In heating up this ring, if a non-conductor was not interposed, the heat thus taken up would be carried off by the partially cooled products of combustion; for this purpose the radiator E is provided with small ledges H, which form a receptacle for ashes, soot, &c., and thus this part of the pipe, at its lower angle, becomes a non-conductor of heat.

Claim.—The construction of the main body of the furnace, substantially as described, forming, by plates attached to the internal surface, a series of tubes around its circumference, so as to form the smoke flues without any vertical joints between the interior and exterior, and without the employment of cores in casting, as set forth.

No. 14,812.—ABRAHAM HAGER and YOUNGS ALLYN.—*Improvement in Bagasse Furnaces.*—Patented May 6, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—The application to bagasse furnaces of a skeleton arch *iii*, which will retard the bagasse in falling direct on such portions of the fuel in a state of combustion, or in any other mode substantially the same, which will produce the same effect.

No. 15,481.—SAMUEL H. GILMAN.—*Improvement in Bagasse Furnaces.*—Patented August 5, 1856.

A fire having been lighted on the hearth in front of the draft-door F, the bagasse is dropped into the dome-covered chamber A from the hopper I, and ignites on the hearth around the base of the pile; and as it burns from below, a new supply of bagasse is dropped from the hopper, and is thus dried in a pile by its own fire.

Claim.—The combination of a dome-covered cylindrical chamber A, having a circular base, with a draft-door located at E, an arch-covered second square chamber B, a pit D, a heat conduit or throat K, when constructed, proportioned, located, arranged, and combined, in the manner and for the purpose set forth and described.

Also, the location in a bagasse furnace of the draft-door or opening through which the air is admitted to support combustion, at or near the hearth level or fire-bed, and directly opposite the opening through the products of combustion, leave the first chamber of the furnace, and in the vertical plane passing through the center of the two chambers A and B, and the center of the opening where the two chambers unite, when the hearth of the second chamber is substantially on a level with the hearth which supports the bagasse to be burned.

No. 14,892.—JAMES WILSON.—*Improved Furnace for Heating Soldering Irons.*—Patented May 13, 1856

C represents a cover, which may be suspended over the top part of the fire-pot A, to prevent radiation of heat.

Claim.—Constructing a furnace, and providing it with any desirable number of cells E E, substantially in the manner described, for the purpose of heating solder irons F with anthracite or other coal.

No. 14,298.—RUSSEL WILDMAN.—*Improvement in Furnaces for Heating Slugs for the Use of Hatters, Tailors, and Others.*—Patented February 19, 1856.

When the fire is to be kindled the plate *h* is raised, and the coal introduced to the fire-box *c*; the door *f* is then to be closed, and the plate left in an elevated position until the coal is sufficiently ignited; the slugs are then placed upon the coals, and the plate *h* closed down: thus the fire is kept at a suitable temperature for heating the slugs without danger of melting them.

Claim.—The plate *h* in combination with the fire-box and lifting arrangement, substantially in the manner and for the purpose herein described and set forth.

No. 15,009.—JACOB GREEN.—*Improvement in Gas-Consuming Furnaces.*—Patented June 3, 1856.

A represents a boiler; B the fire-place; C the mouth of chimney-stack; D a hinged valve, whose movement controls the inlet valves *b*

and *e*; *d* is the main pipe from the blast apparatus. The pipe *G* terminates in the ash-pit, furnishing air under the grate *h*. On the lever *H* of valve *D* is placed a shifting weight *K*, for the purpose of balancing the weight of the valve *D* to the pressure of the gas escaping from the burning fuel.

The inventor says: I am aware that the mere introduction of air into furnaces by union pipes, for the purpose of furnishing a portion through the grate bars, and a part to the upper side or behind the fuel, is not new. I therefore do not claim that as the point of novelty.

I am also aware that Elkanah Ingall proposed an improvement in smoke-consuming furnaces, wherein a mere circulation of the smoke or gases from the fire space or flue with the under side of the grate bars is effected by the use of a fan or blower, situated in said circulation pipe; and that he also provided inlet valves to supply a vacuum, if occurring, as well as an exit valve in the smoke-stack for excess of pressure, all of said valves operating independent of and uncontrolled by each other. I therefore do not claim such as my improvement. But I *claim* the mode of regulating the admission of air to furnaces, so that such admission shall be controlled by the furnace itself by means of lever *H* and valve *D*, in connexion with the rod *n* and valve *b*, and the rod *o* and valve *e*.

No. 15,830.—SAMUEL WETHERILL.—*Improvement in Furnaces for Zinc White*—Patented September 30, 1856.

This invention consists in making the bed *n* of a furnace for the manufacture of zinc white so that it can be vibrated on an axis *p*, during the working of the furnace, for the purpose of preventing slag from forming and adhering to said bed.

Claim.—Making the whole or a portion of the bed of the furnace to vibrate, for the purpose and in the manner substantially as described; but this I only claim when the bed is perforated with numerous small holes, and when used in combination with a forced blast of atmospheric air, which passes to the charge of mixed ore and fuel in numerous small forced jets, substantially as and for the purpose specified.

No. 15,018.—SAMUEL RICHARDS.—*Improvement in Glass Furnaces.*—Patented June 3, 1856.

The nature of this invention consists in constructing and arranging shelves within the cone of an ordinary glass furnace for the purpose of containing the batch or raw material, in order to heat the same to a high temperature before it is introduced into the furnaces.

Claim.—1st. The preparatory deposit of the batch in the cone of an ordinary glass furnace for utilizing the waste heat.

2d. The car *P Q* arranged and used in combination with the shelves *R S T* and *R¹ S¹ T¹*.

3d. The moveable spout *w* for conveying the heated batch from the heating shelves into the crucibles.

No. 15,389.—SAMUEL RICHARDS.—*Improvement in Glass Furnaces.*—Patented July 22, 1856.

The batch or raw material is introduced into the shelves R S, there it remains exposed to the heat of the furnace for twenty-four hours or longer, and whenever it is desired to charge the pots P the valves at the top of the tubes $h h^1$ are opened and the pulverized mass is suffered to pass or flow slowly through the pipes $h h^1$ and falls down through the intensely heated upper part of the furnace into the pots P. In order to keep up a constant flow of the pulverized batch into the tubes $h h^1$ a series of agitators is introduced, one of which is represented at J.

Claim.—1st. The employment of a series of interior tubes $h h^1$, arranged and operating as described.

2d. The employment in connexion with said tubes of vibrating or rotating agitators, J J.

No. 14,196.—SAMUEL MACFERRAN.—*Improvement in Hot-Air Furnaces.*—Patented February 5, 1856.

The nature of this improvement is clearly set forth in the claim.

Claim.—1st. Connecting with the inner end of the bottom-plate O of the space for supplying the furnace with fuel a ring N for supporting and holding together the segmental plates of the fire-pot, so as to enable said ring to be held firmly by its connexion with the plate O, which is secured to the front part of the furnace, as herein described.

2d. Arranging the adjustable horizontal plate k , having spaces in its edges in which the heating pipes fit, above the fire-pot and capable of being raised and lowered for the double purpose of diverging the heat entirely around the said heating pipes, and in contact with the sheet iron radiating casing, and regulating the draught of the furnace and, in fact, converting it into an air-tight heater if desired, substantially as before described.

No. 16,055.—SAMUEL L. HAY and HENRY B. OSGOOD.—*Improved Method of Regulating the Draft of House Furnaces.*—Patented November 11, 1856.

The two-winged valve a is pivoted at b near the top of the supply-pipe C, and when the pressure of air which enters the pipe C in the direction of the arrow is heavier than required, it closes the valve a ; the spring d retains the valve open when the pressure of air upon valve a is not stronger than required for constant use.

Claim.—The compound valve A with the spring d or its equivalent, and equipoise K, in combination with the pipe C, substantially as described, and for the purposes of a compound self-acting regulator, as set forth.

No. 16,317.—JOHN CASE and ISAAC SOULES.—*Improvement in Smoke-Consuming Furnaces.*—Patented December 23, 1856.

As soon as the fire has been kindled, and has generated gas enough to work the engine, the draft doors are closed, and the air for the support

of the combustion is forced into the furnace through pipes J. The heated gases pass from the fire box through flues E into the smoke box C, heating, in their passage, the water in the boiler; and such portion of the gas as has been saturated with oxygen, and thus cooled, becomes so heavy that it readily descends to the bottom of smoke box C and escapes at the waste pipe *h*, while the unoxymated gases are drawn by fan H into the case, and forced through the return tubes F back to the fire chamber to be again heated.

Claim.—1st. The arrangement of the fire and smoke chambers, the direct and the return flues, the gas and the air pump, the pipes to supply air above and below the grate, and the waste pipes for the spent gases, substantially as described.

2d. The combination with the smoke chamber and direct and return flues of the diaphragms, to direct the gases downward and backward as they enter the smoke chamber, and to facilitate the precipitation of the sparks and thoroughly oxydated gases from those gases which are but partially burnt, and require for the completion of their combustion to be returned to the fire chamber.

3d. The arrangement, at or near the bottom of the smoke chamber, of an open orifice for the free and constant escape of the waste gases, in combination with the smoke chamber and direct and return flues, substantially as set forth.

4th. In combination with the smoke chamber, arranging the hot gas and cold air pumps, substantially as described.

No. 14,601.—ROBERT B. FELLOWS.—*Improved Tempering Furnace.*—Patented April 8, 1856.

H is a receptacle for coal, G is the grate, and B the blast pipe. The articles to be tempered are placed within the tubes T and C, where they are heated for the hardening. They are then laid upon the sand on plate P for the purpose of drawing. The tubes T are open at both sides, one being exterior, the other within the furnace.

The inventor says: I do not claim the hardening or the plate P for drawing when accomplished or employed separately by separate fires, nor do I claim the use of the tubes or the plate before mentioned except when combined and arranged as described. But I *claim* the combination of the plate P and tubes T, or their equivalents, with a single fire, in the manner and for the purposes substantially as set forth.

No. 15,791.—WILLIAM M. WRIGHT.—*Improvement in Warm-Air Furnaces.*—Patented September 23, 1856.

The nature of this invention will be understood by reference to the **claim** and engraving.

The inventor says: I do not claim radiating or projecting surfaces **which** are cast with the fire-pot or upper section of the furnace, as used in James Miller's patent of October 16, 1838.

But I *claim*, 1st, the manner of increasing the radiating surface by

the use of the movable plates, all in the manner and for the purpose set forth.

2d. The manner of constructing the ash box, with its rim *m* to receive the fire pot, and projecting arms or supports *o o o o*, substantially in the manner and for the purpose specified.

No. 14,674.—ALEXANDER McDONALD SPRAGUE.—*Improved Apparatus for Feeding Furnaces with Fuel*.—Patented April 15, 1856.

This apparatus is intended for feeding the fires, without admitting to the fires such quantities of cold air as materially to check combustion, and without exposing the fireman to the heat of the furnace.

The operation will be understood from the claim and the engravings.

Claim.—The furnace feeding apparatus, composed of a cylinder C, or box of other form, sliding through an opening in the furnace front, having its inner end closed, and an opening *a* in the bottom being fitted with a door C at its outer end, and with a piston D, and a sliding shutter *b*, all arranged and operating substantially as herein described.

No. 14,233.—JOHN A. GALLAHER, jr.—*Improvement in Gas and Steam Cooking Apparatus*.—Patented February 12, 1856.

The nature of this improvement is sufficiently indicated in the claims and engravings.

Claim.—1st. The construction of a gas-cooking apparatus formed of skeleton frame plates *a a*, having ventilating slots or equivalents *b b*, and the arrangement therewith of series of longitudinal and transverse jet tubes or pipes in tiers, as in fig. 2 *m m*, together with the compound tubular valve-pipes fig. 7, and the combination of the above devices with detachable drawer-like ovens or baking apartments *g g g g*¹, *g*², and fig. 5, substantially as set forth.

2d. The construction of the central reservoir heater *d*¹, *d*¹, *d*², *d*², and the steam-boiler chest device *e e*, *f f f f*, *g g g*, fig. 6, as described and in application and use as set forth.

3d. The compound suspension griddle fig. 3, and the ventilating diaphragm vessels figures 4 and 5, substantially as described, and used for the purposes set forth.

4th. The air-supply bellows or pump device fig. 8, and the application and use of the same, as described, and for the purpose set forth.

No. 14,091.—CHARLES A. CUMMINGS and CORTLAND DOUGLASS.—*Improvement in Gas-Burners*.—Patented January 15, 1856.

The two jets of gas issuing from the orifices *a a* strike the plate *b* on opposite sides and are spread into a broad sheet. The plate becomes highly heated, and serves as a heat reservoir, by which the gas is heated, so as to produce a more perfect combustion.

Claim.—The interposition between two jets or streams of gas issuing from the same burner of a plate *b*, substantially as and for the purposes herein set forth.

No. 14,737.—WILLIAM F. SHAW.—*Improvement in Gas-Burners.*—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The interposition of an imperfectly conducting body *c* between the tip *a* and base *b* of gas-burners, for the purpose of preventing the conduction of heat away from the point where the gas is burned.

No. 14,822.—JAMES NEAL.—*Improvement in Gas-Burners.*—Patented May 6, 1856.

The gas in its passage through the sand keeps the particles thereof in motion, and the deposited coal-tar will thus be prevented from choking the filtering medium.

The inventor says: I do not claim providing a gas-burner with a filter or strainer arranged within it, nor the application of felt cloth or other fibrous material or fabric as a strainer.

But I *claim* constructing the burner not only with a covered cup or sand reservoir *C*, and a discharging pipe *h* extending into said reservoir, but with one or more passages *b b i i* for the gas to flow around and into the cup *C* and through its loose sand or straining contents; my improvement enabling me to employ powdered quartz or a loose mineral matter or substance as a filter or strainer, and thereby attain advantages as herein before stated.

No. 16,176.—JOB CORNELL and BARNETT McDUGALL.—*Gas-Burner.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Increasing the width of the slit of the burner towards the centre, and bringing it to a sharp point, or nearly so, at the extremities, in the manner substantially as represented and described.

No. 15,614.—AUGUSTUS R. MARSHALL.—*Automatic Attachment to Gas-Burners.*—Patented August 26, 1856.

The catch *n* consists of a pin secured to a small bar *n*¹ which stands below the disk *p*, where it is hinged at one end to a stand *n*² within the box *G*, and supported at the other end by a spring *r* resting on the bottom of the box in such a manner that before the gas is lighted and the disk *p* distended the catch-pin *n* is held up clear of the lever *h* and

standing immediately above the catch j ; but that when the disk p becomes distended by the expansion of the air in the air chamber, it presses down the bar n^1 and causes the pin n to press down the catch j and to stop and lock the lever h . The catch n continues in operation till the gas light is extinguished, when, by the cooling of the air in the chamber I and its consequent contraction, the disk p is caused to rise, and thus allow the catch n to rise clear of the lever h and liberate it, thus liberating the lever H and leaving the rod b free to move upward, and by that means allowing the valve D to be closed by the spring a .

Claim.—1st. The combination with the thermostat p and valve D of the catch n on the bar n^1 , and the system of levers h H for the locking and unlocking of the valve, in the manner and for the purposes specified.

2d. Combining with the locking-catch n , or its equivalent, which is acted upon by the thermostat p , another catch j , so arranged as to lock the valve open until the catch n is set in operation by the action of the thermostat, and then to be moved out of the way by the catch n , substantially as described.

No. 15,219.—HENRY A. CHAPIN.—*Improved Machine for Reaming and Tapping Gas-Fittings.*—Patented July 1, 1856.

The fitting being clamped in the position shown in figure 1, the holder L is turned so as to bring the large rimmer f in line with the centre of the fitting; the shaft M is then revolved, and the rimmer is brought up to its work by the lever P . After the opening in the fitting is suitably enlarged, the holder is revolved, and the large tap g is brought up, by which one of the female screws in the run is formed. The fitting is then revolved 180° . so as to bring its opposite end into position to be operated upon by the same tools. The fitting is then turned, so as to bring the outlet h opposite to the tool-holder, and the small rimmer i is brought up, then the corresponding tap m , and the three screws are completed.

Claim.—The rotating tool-holder in combination with the revolving chuck or clamp for holding the fitting.

No. 14,325.—WILLIAM F. SHAW.—*Improved Apparatus for Heating by Gas.*—Patented February 26, 1856.

The nature of this improvement will be understood from the claims and engraving.

The gas enters through the conduit pipes e .

Claim.—The combination and arrangement, substantially as described, of air and gas-burners or distributors, chambers A^1 and B^1 , and their flue and air-supply conductors F C C , the whole being made to operate together essentially as specified. Also in combination with the gas-burner the open top and closed bottom wire-gauze tube g , operating as specified.

No. 14,414.—WILLIAM F. SHAW.—*Improvement in Apparatus for Heating or Cooking by Gas.*—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I am aware that perforated cones have been used for admitting atmospheric air to ordinary fuel for promoting combustion. This I do not claim. But I *claim* the application of a cone or dome formed of wire gauze or pierced metal to an ordinary wire-gauze gas-burner, for burning mixed gases and air, in combination with an outer cylinder of wire gauze or pierced metal, for the supply of atmospheric air, divided into jets, substantially as herein described.

No. 16,031.—WILLIAM F. SHAW.—*Apparatus for Heating and Cooking by Gas.*—Patented November 4, 1856.

This apparatus is an improvement on a similar apparatus of W. F. Shaw, patented 26th February, 1856, and the nature of this invention will be understood by reference to the claim and engravings; the object of the concentrator or guide is to facilitate the action of the perforated tube D, by bringing into contact with it a greater amount of air than would naturally strike against it, provided the concentrator were removed from it.

Claim.—Combining with the wire-gauze or perforated tube D, and the air and gas-burner A, an air-guide or concentrator G, applied thereto, substantially in the manner and for the purpose specified.

No. 14,770.—WILLIAM LYON and CHARLES W. DICKINSON.—*Improvement in the Construction of Dry Gas Meters.*—Patented April 29, 1856.

Gas is admitted through the pipe F into the small gas channel G; from thence it passes under the slide valves V W, through the openings *cc*, and alternately through the openings *ii* and *jj*, and alike alternately into the bellows, and surrounding it on the outside as the valves are operated, permitting it to pass through I¹ I¹ or J¹ J¹ to the openings above named *ii* and *jj*, which communicate with the inside and outside of the bellows of each compartment C D. The bellows being inflated expand and move the valves by means of the swing levers H, which turn the rods I I back and forward. This motion of the valves opens the apertures by which the gas within the bellows is permitted to escape into the upper chamber and pass through E² to the gas burner; at the same instant the slide valves open the apertures which permit the gas from the channel O to pass into the inferior chamber. The pressure thus operates in an opposite direction and causes a contraction of the bellows, carrying the levers H in an opposite direction, thus causing a revolution of the wheel P, and a continued operation of the valves.

The varying action of the springs F¹ F¹ counterbalances the unequal tension of the bellows.

Claim.—So constructing the metallic bellows for the measurement of gas, that the spring or bend of the metal may form chambers of varying dimensions and of definite capacities for receiving and measuring the gas.

2d. We claim giving motion to the registering wheel A' by the impinging lever 2 operated by the wheel P, and the levers and connixions communicating with the bellows.

No. 16,073.—W. G. STERLING.—*Gas Regulator*.—Patented November 11, 1856.

This apparatus consists of a drum into which a balance D is fitted loosely so as to be able to vibrate on the inner circumference of said drum. The stationary partition B reaches down into a groove of the balance D, which is filled with mercury, so as to divide the interior into two chambers. The head, fig. 2, being fitted to the drum, the apparatus operates as follows: The gas enters the pipe I through the valve G, and passes through pipe L to the burner; it also passes through aperture M into one of the chambers of the drum, and, if under a heavy pressure, depresses one side of the balance D, operates crank E, and closes valve G.

The inventor says: I am aware that two chambers connected at the bottom have been used by means of a float in one chamber attached to a valve as a regulator; and while mercury has been found too heavy, other fluids, by their evaporation, constantly derange the operation of the machine; but by means of the vibrating balance in both chambers, my apparatus is extremely sensitive to the slightest pressure, and not subject to this difficulty.

I claim the vibrating balance D, with the partition B, forming two chambers and extending into said balance D, which is so adjusted that it vibrates in the two chambers, and is connected with a valve in any suitable form, as described, or any other mode equivalent thereto.

No. 14,893.—HENRY WATERMAN.—*Improvement in Gas Regulators*.—Patented May 13, 1856.

The inventor says: The parts *g g i* and *k*, which form what I call the valve, I make in such a manner, as to proportions of weight, that the point of connexion with the link *h* shall be, as near as possible, the centre of gravity of the valve, so that when the level of the apparatus is disturbed by change of position of the metre to which it is usually attached, it will not require increased force from the floatings *d* and consequent increased pressure in the branch to raise the valve against the seat.

Claim.—The construction of the valve *g g* of the gas regulator in the annular or ring form, with two faces or leats of different diameter, one at the outer and one at the inner periphery or edge, so as to produce greater circumferential capacity or opening for discharge of gas, with a limited area of valve relatively.

No. 15,028.—MARSHALL WHEELER.—*Improvement in Gas Regulators*.—Patented June 3, 1856.

The line $x x$ indicates the water-level in the gas regulator. If there is a great pressure of gas in the street main, the gasometer E of the regulator will rise, and thereby diminish the exposed portion of the aperture m in the end of the goose-neck d , at which the gas enters, and so on. The quantity of gas that can enter will therefore depend upon the position of weight j . The force of the gas in the street main will exert no effect upon the gas regulator unless it should fall below that at which the regulator is gauged for, and in that case the gasometer will sink and allow the gas to flow at its reduced force through the regulator to the burners.

Claim.—The combination of the gasometer E and its goose-neck d , with the fluid receptacle and with the graduated lever i , and the weighing poise j .

No 14,437.—JAMES B. BLAKE.—*Improved Apparatus for Roasting and Broiling by Gas*.—Patented March 18, 1856.

In the sockets B B (which are connected with the main pipe A) revolve the vertical pipes C, with their branch-pipes D, provided with the burners c . When used as a roaster, the branch-pipes are set in the position as seen in figs. 1 and 2. The dotted lines indicate the position when used for the purpose of broiling.

Claim.—The within described roaster and broiler, constructed and operating in the manner substantially as herein set forth.

No. 14,142.—JOHN T. OSBORN.—*Improvement in Grate Bars*.—Patented January 22, 1856.

The object of this improvement is to let the cold air enter to the opening b in the boiler wall K, and circulate through the hollow spaces a , formed by the concave sides $c c$ of the bars.

The inventor says: I *claim* increasing the height of ordinary grate bars of furnaces, by an addition to their top of a piece having its sides concave, and without any jogs in its entire length, substantially as described and for the purposes set forth; and I distinctly disclaim all other features of the grate bar described, except what I have specifically claimed.

No. 14,642 — JOHN SAWYER, assignor to Himself and THOMAS HALE.—*Improved Apparatus for Heating and Ventilating Buildings*.—Patented April 8, 1856.

In the application of this apparatus to a building, the air-heating chamber A is to be placed in the lowest story, while the ventilating chamber G extends into each of the other stories. Separate stories are ventilated by means of pipes I K. Should it be desirable to heat any

of the rooms by means of separate stoves, they may be made to communicate with the main smoke-flue B by lateral pipes L M.

The inventor says: I am aware that a smoke-pipe has been enclosed in a casing so as to leave a space around the said pipe for the reception and heating of external air and carrying the same into one or more apartments of a building. Therefore, I do not claim such; but having made a peculiar combination and arrangement of the smoke-pipe, air-heating chamber, hot air flue, and ventilating chamber, my invention rests there, and consequently, what I *claim* is—

The arrangement of the ventilating chamber G with the main hot air flue F, the smoke flue B, and air-heating chamber A, the ventilating chamber and hot air flue having valves *c c*, *d d*, and *e e*, applied to them; the whole being capable of being used in heating and ventilating the apartments or stories of a building.

No. 14,743.—GEORGE S. G. SPENCE.—*Improved Pressure-regulating Apparatus for Steam-heating Boilers*.—Patented April 22, 1856.

The inventor says: I am aware that it is not new to apply to the boiler and the cylinder or valve-chest of a steam engine a refrigerating apparatus or condenser, for the purpose of condensing the waste steam, the water of its condensation being subsequently returned to the boiler. I am also aware that a safety-valve is no new contrivance as applied to a steam-boiler. Therefore I do not claim such, separately considered. My invention has reference particularly to an apparatus for heating buildings by the condensation of steam through pipes, radiating vessels, or chamber, so connected with a boiler or steam generator, that the steam, after having imparted heat to and been condensed in said radiators, shall be returned to the boiler in the form of water. To such an apparatus or to its boiler I apply my improvement; and it should be borne in mind that the water condensed in the radiators *does not return through my apparatus* to the boiler. It is only the steam which may be condensed in the receiving chamber F of the safety apparatus that returns to the boiler through the stand pipe H. While the stand pipe H and the chamber or vessel F, in connexion with the safety-valve, serve to regulate the pressure, the chamber F, its cover M, and the refrigerating cistern G perform, besides other important functions, that of receiving any amount of steam which may be suddenly blown through the pipe I, and condensing it so that it may be returned into the boiler by means of the pipe H. Thus while we insure safety to the boiler and heating apparatus and regulate the pressure of the steam, we prevent the steam from being wasted and condense and return it to the boiler.

What, therefore, I *claim* is, the above described peculiar arrangement of the steam generator or boiler B, the stand-pipe H, the condensing apparatus (composed of the receiver F, the cover M, and the refrigerating vessel G), the safety-valve, and its pipe I.

No. 14,158.—STEPHEN J. GOLD.—*Improvement in Apparatus for Heating Buildings by Steam.*—Patented January 29, 1856.

When from the temperature of the external air the condensation in the radiators is slow, or but a portion of the radiators is brought into action, there will be an increased pressure of steam on the surface of the water in the boiler, causing it to rise through pipe C into box D. This rise of water in the box gradually diminishes the draught-passage until, by the continued rise, the mouth of chamber E is reached and the hydraulic seal is established, entirely shutting off the draught, which is represented by the arrows; this, of course, deadens the fire. But should the pressure still continue, the water will pass into chamber E and lift float *f*, thereby raising the conical valve *a* and permitting the entrance of cold air into the boiler flue. Cold air let in at this opening takes the place of the heated air there existing when the flue is closed, and causes the steam instantly to condense. This removes the pressure and permits the water to return to the boiler, letting down valve *a* and gradually removing the hydraulic seal, when the draught is reinstated.

Claim.—The automatic governing of the draught and the shutting off of the same, by the forcing of water from the boiler by pressure of steam, under the circumstances and substantially as specified; or, in other words, establishing the hydraulic seal.

Also, the automatic government of the valve *a* by the forcing of water from the boiler by the pressure of steam, under the circumstances and substantially as set forth.

The governing of draught-valves by expansion of water being expressly disclaimed, as constituting no part of the invention.

No. 14,392.—CHARLES DAVENPORT.—*Improved Apparatus for Heating Buildings by Steam.*—Patented March 11, 1856.

The cock *h* being opened and water being admitted into the supply cistern P until it reaches the required level within the boiler, and the fire being kindled, the steam rises through the pipe U into the heater T, there being one or more of these heaters in each of the apartments to be heated. The chains M and L are then adjusted to each other, according to the temperature of the weather and the pressure required. If the steam be shut off from one or more of the heaters, the pressure within the boiler will be increased, and the float I will rise and close the dampers *e* and *l*, checking the fire until the pressure is reduced to the point at which the chains M L are adjusted. Should the cold become severer, the chain M is hooked lower down upon the chain L, and the float will then rise higher before the dampers are affected.

Claim.—So connecting the float with the dampers of both the draught and smoke flues by means of the chains M and L. or their equivalents, that the pressure of the steam within the boiler may be graduated to the temperature of the atmosphere and the degree of heat required within the building, as set forth.

2d. So connecting the float which actuates the dampers of the draught

and smoke flues with the cock X, which admits water from the supply cistern to the boiler by means of the lever Q, or its equivalent, that while the float is left free to rise to any required distance, it will open the cock whenever the water falls below its level, as described.

No. 14,885.—A. S. PELTON.—*Improvement in Apparatus for Heating Buildings by Steam.*—Patented May 13, 1856.

Before the generation of steam, the air in chamber D becomes heated, and rises through pipe *e* to the radiator, gradually warming the same. This warming of the radiators by hot air causes the effect of the furnace to be felt sooner than it would be felt were the generation of steam waited for, and causes the radiator to fill with steam much quicker than when the steam has to enter cold radiators. When the steam is generated, it passes, as shown, by arrows through chamber D to the radiator, and is superheated thereby.

Claim.—The construction of the apparatus with an annular chamber D around the fire pot, and constituting a portion of the channel from the boiler to the radiator C, for warming the air in the radiators previous to the generation of steam. The employment of the chamber as a more superheater of the steam not being claimed as my invention.

No. 14,360.—CHARLES H. JOHNSON.—*Improvement in the Apparatus for Heating Buildings by the Combination of and Burning Gas, Air, and Steam.*—Patented March 4, 1856.

The perforated diaphragms *b* have their upper surfaces covered with loose pumice stone, or other proper straining material, for the purpose of mixing the air and gas, as well as straining such before they impinge against diaphragms *a*.

The inventor says: I am aware that a single air and gas burner has been provided with a perforated diaphragm, arranged below that on which the gas is burned and in the gas receiving chamber, the same being for the purpose of commingling the currents of air and gas before they might reach the perforated diaphragm on which they are enflamed; therefore I do not claim such. But I do *claim* the combination and arrangement of an air divider (a closed box H, having a perforated diaphragm *c* extending across it, and receiving air from a pipe as described) with one or more gas receiving chambers D D D, and the air and gas mixers *b b b* of the burner diaphragm *a a a* of the same as described, such being for the purpose or purposes as herein before specified.

No. 14,348.—ROBERT CORNELIUS.—*Improved Arrangement of Steam Tubing for Regulating the Heating of Buildings.*—Patented March 4, 1856.

The end of tube A B is fastened to the wall, the end of tube J S is also fastened to the wall. The end J of tube J S is perforated at its

sides (see holes *i*.) When the tubes expand, the end *J* of tube *J K* (the latter sliding within the packing-box *L*) will approach the open end *B* of tube *A B*, and thus the space *O* will be diminished, through which the steam escapes from *J* into tube *B*; thus the heat in the building will be regulated.

Claim.—The arrangement of one section of the steam tubing within another section, whereby the steam tube itself is made to serve as a regulator and controller of the heat of the building.

No. 14,317.—WILLIAM M. KIMBALL—*Improvement in Lamps*.—Patented February 26, 1856.

The annular recess *C* formed in the movable top *B* prevents the capillary attraction which would otherwise cause the oil to rise between the outer case and the movable top. *W* represents the wick.

Claim.—The recess *C*, operating in the manner and for the purpose substantially as described.

No. 15,636.—PETER C. GUIOU and PAUL K. WOMBAUGH, assignors to PAUL K. WOMBAUGH.—*Improvement in Lamps*.—Patented August 26, 1856.

The operation of this lamp is as follows: The burner being removed, the whole interior of the bowl *e*, stem *d*, and bulb *f* is filled with combustible liquid, the valve *h* being temporarily opened by pressing against its stem to allow the entering liquid to drive out the air from the bulb *f*. When the lamp has been some time in action, and it is desired to replenish the bowl *e*, it can be accomplished by pressing against the outside of bulb *f*, and thus forcing the liquid to flow up through the opening *c* into the stem *d* and bowl *e*. By releasing the bulb *f*, it will resume its former shape, and in so doing will draw a fresh supply of air through the air duct *G*, which will prevent the liquid from returning downwards.

Claim.—The elastic bulb or receiver *t*, surrounding and communicating at the bottom with a hollow stem *b c d*, which supports and opens into the bowl in the described combination with the air duct *g*, having an inwardly opening valve *h*, affording the described means of communication from the external atmosphere to the upper part of the bulb, or equivalent devices, for the purposes explained.

No. 14,478.—ISAAC VAN BUNSCHOTEN.—*Improvement in Argand Lamps for Burning Rosin-Oil*.—Patented March 18, 1856.

Conical chimneys are liable to break on account of their unequal expansion. The separate glass cone *e* obviates this difficulty.

The interior sleeve or cylinder *8* encloses the openings *7*, so as to prevent the wick from catching fire at the openings *9*. It will also collect all that overflows from the wick, which would otherwise run down the wick tube *3*.

The inventor says: I do not claim a conical glass chimney or a conical end to a glass chimney, as these are well known and in general use; neither do I claim a metallic cone; but I am not aware of any separate glass cone ever having before been made use of, similar to that set forth herein.

I *claim*, 1st. Deflecting a portion of any passing draught or current of air up the exterior air tube, by means of the wings *f f*, or their equivalents, to counteract the suction or partial vacuum produced at the other portions of the lamp by said passing draught, or current of air, as specified.

2d. I claim the wings *f f*, or their equivalents, applied around the wick tube 3 to cause any sudden draught or current of air to be deflected with equal force up into the cone 2 and external draught, and down into the drip cup *e* and internal draught, in the manner and for the purposes specified.

3d. I claim the separate transparent cone *e* within the chimney *d*, rising only to about the height of the button 7, for the purposes and as specified.

4th. I claim the sleeve or cup 8, combined with the perforated wick tube, and enclosing said perforations in the manner and for the purposes specified.

No. 14,248.—CHRISTOPHER MOELLER.—*Improvement in Wick-Holder for Argand Lamps*.—Patented February 12, 1856.

The wick *w* is put upon wick-holder *a* with great facility, by compressing its fingers, inserting them within the end of the wick, and then suffering the fingers to expand by their elasticity. The wick is thus held securely, and the friction of the wick and fingers upon the tubes *f* and *g* is such that the rack cannot fall by any sudden jarring of the lamp, and draw the wick down with it.

The inventor says: I do not claim a spring clasp for embracing the wicks of lamps; but I *claim* the peculiar mode herein above set forth of holding the wick and pressing it outwardly against the wick tube, in the manner and for the purposes herein set forth.

No. 14,492.—ABRAHAM COATES.—*Improvement in Regulating the Flow of Oil to the Wick in Carcel Lamps*.—Patented March 25, 1856.

If the oil should flow too fast it will fill the drip cup *k* faster than it can escape through *m*, and the increased weight will cause the lever *k* to descend and diminish the valve opening in the space *c* of the syphon tube *d*. The cup will then empty itself to the proper level, return to its proper position, and thus regulate the flow of oil.

Claim.—What I claim as my invention in lamps in which the oil is forced to the wick so as to overflow is, regulating the supply of oil in the burner by means of the self-emptying drip cup operating upon the supply valve, as herein set forth.

No. 15,724.—SALMON BIDWELL.—*Improvement in Lamps for Burning Fluids*.—Patented September 9, 1856.

The wick is inserted into the conical space between the outer cylinder B and the inner cylinder E, and can be compressed between this cylinder by means of the screw *a* operated upon from the thumb plate H. The object of this arrangement is explained in the accompanying claim.

Claim.—The mode of compressing the wick in the manner described, so as to prevent any change in the light caused by the jar of the lamp, and to prevent the escape of the burning fluid faster than is desired, and to secure the gas generated from the same, and to enable the use of any desirable fluid for lamp purposes.

No. 14,369.—PRENTICE SARGENT.—*Improvement in Lamps for Burning Rosin Oil*.—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

D represents the outer wick tube, E the wick.

Claim.—The annular air reservoir P, in combination with the entry space T and inwardly projecting lips *o p*, substantially as described, for the purpose of rendering the outer draught sufficiently constant to prevent the smoking of the lamp by any gusts of air or sudden movement to which the lamp may ordinarily be subjected.

Also, the fine apertures or meshes *n n*, opening into an outer chamber S, in combination with said chamber, and with an inner perforated or reticular partition *r* separating said chamber from the inner draught tube G, substantially in the manner and for the purposes herein specified.

No. 15,686.—WILLIAM B. CARPENTER.—*Extinguisher for Fluid Lamps*.—Patented September 9, 1856.

The extinguishers A are attached to springs D, which latter are attached to a ring on the burner B; the ring and extinguisher may be made to slide up or down on the burner D as represented in the illustration. This arrangement dispenses with the chain used heretofore to connect the extinguisher to the lamp.

Claim.—The divided cap or extinguisher A A, in combination with the springs D D and the ring *c*, the whole operating substantially as described.

No. 15,198.—NICOLAUS LINDEN.—*Improvement in Fountain Lam*.—Patented June 24, 1856.

The reservoir is filled by turning the inner cylinder E, by means of handle G, till the openings *b* and *f* coincide. The cylinder is then filed through the openings *f* and *b*, the valve *c* being open in consequence of the upper projection *e* bearing downwards the springs *d*

The cylinder is then turned again till *b* is over the orifice of the tube *F*, the valve at this point being opened by the lower projection *e*, and the oil passes down into the wick-tube.

Claim.—Constructing the reservoir *C* of two cylinders *D E*, one placed within the other, the inner cylinder *E* being provided with a valve *c* attached to spring *d d*; said valve being opened at the proper points by the projections *e e* on the inner side of the cylinder *D*.

No. 14,994.—SOLOMON ANDREWS.—*Improvement in Gas-Burning Lamps.*
Patented June 3, 1856.

The nature of this invention consists in surrounding the wick-tube *b* with an outer cylinder *a*, thereby avoiding partly the danger of explosion by preventing the fluid from coming in contact with the heated portion of the lamp.

Claim.—The wick-tubes surrounded by an outer tube or cylinder, in the manner and for the purpose specified.

No. 14,727.—ALONZO M. MACE.—*Improvement in Hydro-Carbon Vapor Lamps.*—Patented April 22, 1856.

The nature of this invention will be understood from the claims and the engraving.

The inventor says: I am aware that it is not new to provide a wick-tube with a retort, and to heat such by a separate burner or a separate wick-tube; and I am aware that it is not new to provide the wick-tube with a bulb or retort to extend the wick into it so as to fill it, and to have jets or holes made in the tube or bottom of the retort or bulb so that the flame thereof would only impinge against the bottom of the retort, the same being described in a patent granted August 27, 1850, to Clayton and Baily.

I do not claim any of such devices.

But I *claim* the particular arrangement of the bottom of the retort *F* and the jet holes *e e* with respect to the wick-tube *B*, whereby the inflamed jets of vapor issuing from the jet holes *e e* are driven downward against the wick-tube, and their currents of heat made to ascend against the concave bottom of the retort, the same serving to greatly facilitate the generation of vapor as well as the heating of the same.

I also claim combining with the retort the bell-shaped cap or heat-retainer *G*, made of transparent or other proper material, the same being arranged substantially in manner and for the purposes as shown.

No. 15,829.—THOMAS VARNEY.—*Improvement in Hydro-Carbon Vapor Lamps.*—Patented September 30, 1856.

The liquor to be vaporized is contained in the vaporizer *C*; the air is forced with a gentle pressure into the vaporizer through the pipe *D*, and, circulating through the passage *h*, takes up the vapor from

the liquid, and passes up the pipe *g* to the burner. The liquid is supplied from the reservoir *B* to the vaporizer *C* just as fast as it vaporizes and is consumed, by the escape of air up the tube *c*, as the level of the body of liquid at the bottom of the vaporizer falls below the tube *c*, and therefore the quantity of liquid in the vaporizer remains the same.

The inventor says: I do not confine myself particularly to the convolute arrangement of the passage *h h* in the vaporizer, as there are other forms in which a passage or passages may be arranged to cause the air to take a circuitous route through the liquid.

But I *claim* the combination of the reservoir *B*, by means of a seal-pipe *C*, with the stationary vaporizer *C*, containing a circuitous passage, under any arrangement, substantially as described.

No. 14,806.—SAMUEL DAVIS.—*Improvement in Lard Lamps*.—Patented May 6, 1856.

The aperture *F* admits air to pass up through the stem *E* and tube *D*, whereby the light is caused to burn with increased flame and brilliancy. The light can be extinguished by pressing the thumb against the aperture *F*. The slots *B* are for the purpose of allowing the wick to be raised or lowered by a pin or wire.

The inventor says: I do not claim a tube or a feeder with apertures.

But I *claim* a tube with a cone-shaped feeder *A A*, lard heater in two segments, (to admit of a double wick,) with its apertures, and the aperture *F* in the stem *E*, all in combination.

No. 15,364.—JEREMIAH S. SENSENY, assignor to Himself and GEO. H. MERKLEIN.—*Improvement in Lard Lamps*.—Patented July 15, 1856.

The lard is heated to a liquid state and poured into the reservoir *C*, whence, by turning the spigot *k*, it can be let into the burner *h*. After the lamp is once filled, it can be refilled at any time without liquifying the lard, which is the principal feature of this invention.

The inventor says: I *claim* the arrangement and construction of a lamp, as herein described and for the purposes set forth.

No. 15,172.—SAMUEL E. CLEVELAND and HENRY B. CLEVELAND — *Improvement in Locomotive Lamps*.—Patented June 24, 1856.

When the can is to be filled with oil, the plunger *B* is near the bottom of the can, the oil being above. When the plunger *B* is raised, a portion of the oil passes through the valve *A* and below the plunger, and then the power and pressure of the spring *D* is exerted upon the plunger, whereby the oil is forced up on the outside of the tapering tube *C* until it flows over into the tube, and down into the feeding tube *R*. To compensate for the less power exerted by the spring, the tube *C* is made tapering, so that there is greater room or space for the

oil to pass through the mouth of the tube X when the pressure of the spring is least, the smaller end of the tube being connected to the plunger.

Claim.—The arrangement and combination of the valve A with the plunger B and spring D D, for the purpose of forcing the oil from the can or reservoir to the burner or wick.

No. 14,912.—JOHN STUBER, assignor to JOHN CARTON.—*Improvement in Locomotive and Railroad Lamps.*—Patented May 20, 1856.

To regulate the flow of oil through the tube *u* the screw rod *z* is introduced, which, by reason of the thread A, furnishes a spiral passage for the oil.

The usual circular passage around the burner cylinders for the ascent of the air is closed up near its bottom, leaving holes to admit the lower ends of the short tubes 5, 6, 7. The structure A¹ is dropped in around the burner cylinder before the cap is put upon the cylinder, in such a manner as to insert the lower end of the short tubes in these holes. This forces the air in ascending around the outside of the burner to rise through the tubes 5, 6, 7, and issue around the flame of the lamp through the apertures *c*¹ *d*¹ *e*¹ in the circular hollow ring B¹. The tube D is also introduced for the purpose of furnishing a more abundant supply of air to the flame, in the manner as shown.

The inventor says: I do not herein claim as new, generally, the forcing of the oil from the oil chamber into the burner by means of the spiral spring and valve, nor the operating of the valve by means of the ratchet bar and key; as these devices have heretofore been used.

But I *claim* the tubed structure A¹ (figure 2) as combined with the burner to regulate the flow of air to the exterior of the flame of the lamp.

I also claim the arrangement of the feeding cup *t* and the tube *u* provided with the regulating spirally grooved fillet A.

No. 15,305.—FREDERICK J. SEYMOUR.—*Improvement in Locomotive Reflector Lamps.*—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claims and illustration. The air is admitted near the front edge at *m* and the chimney *l* is placed to the rear of the vertical line above the burner, so that the rush of air through the reflector, passing in nearly a straight line from one opening to the other, as indicated by the arrows, will take the top of the flame and carry it backwards and up the chimney *l*, preventing smoke from being deposited in the reflector.

The inventor says: I do not claim regulating the amount of fluid or burning material supplied to a wick and burner by means of a cock, as this has been done, but I am not aware that the wick itself has ever before been passed through the cock, and the flow of burning material, regulated by the compression thereof on the wick, whereby the cock

can be placed near the burner and the wick be allowed to extend below said cock to any desired point under circumstances that would prevent the use of a cock to regulate the supply to the wick; and this arrangement becomes indispensable with my reflector lantern, because it is required that the oil from the reservoir may be burned up, and also that the wick be prevented from overflowing in filling said reservoir.

I claim constructing the reservoir of locomotive lamps so that the reflector becomes one side of said reservoir, for the purpose of heating the contents thereof and rendering the same liquid and limpid.

I also claim constructing the reservoir of locomotive lanterns by means of a case surrounding the whole reflector and provided with the air-tight screws *i k*, so as to cause said reservoir to become a self-supplying fountain to the burner tube *f*.

I also claim regulating the supply of oil or other burning material to the flame of a lamp, or shutting off said supply by means of compression on the wick by the cock *g*.

I also claim placing the chimney *l* to the rear of the vertical line over the flame, when the draft is supplied at or near the front of the reflector.

No. 16,180.—HORACE L. HERVEY.—*Improvement in Pocket-Lamps*.—Patented December 9, 1856.

By pressing inward the catch *G* the revolving match holder *C* is set free and caused to revolve a portion of the way around by the action of spring *Q* upon it; and in this manner it brings one of the matches *J* in contact with the sand-paper *I*, which thus ignites the match, and as the latter passes over wick *k* it ignites the same.

Claim—The combination of the revolving match-holder with the pawls *E*, spring *F*, catch *G*, and extinguisher *L*, for the purposes of a portable pocket-lamp, as set forth.

No. 15,547.—SAMUEL WHITMARSH, assignor to WILLIAM J. DEMOREST.—*Improved Vapor-burning Lamps*.—Patented August 12, 1856.

The reservoir *A* being filled, and the cock *C* opened, the alcohol passes through pipe *B* to the space *E* of the burner *D*, and is dispensed through the annular space *E* by the gravel filling. A small amount of alcohol, being poured upon the wire gauze *F* and lighted, heats the gauze sufficiently to vaporize the alcohol contained in the space *E*. The flame created by the combustion of the vapor is intensified by the oxygen of the atmospheric air, which is admitted through the air holes *G*. The flame rising against the outside of cylinder *H* heats the latter, and causes the air inside of it to expand and rise through the tube *I*, and against the cover *J*, whence it is deflected towards the inside of the cylinder *H*, where it escapes through a series of holes in said cylinder, and supplies the flame with a further portion of oxygen to yet increase its intensity.

The inventor says: I do not claim the principle of increasing the intensity of combustion or flame by an admixture of atmospheric air, as that has long been known and used.

But I *claim* the method of heating the air supplied through the air-holes in the outer cylinder R, in the space between the cylinders H and I.

No. 14,201.—FRANCIS MORANDI.—*Improvement in Lanterns*.—Patented February 5, 1856.

This lantern is used for lighting street gas-lamps without opening the lantern. The funnel D being held over the gas-burner E, as represented in the engraving, and the cock being turned, a portion of the gas is drawn towards the flame in the lantern and is at once ignited.

Claim.—The funnel D applied to the lantern, in the manner and for the purpose substantially as herein set forth.

No. 15,782.—SINCLAIR SHANNON.—*Improvement in Lanterns*.—Patented September 23, 1856.

The nature of this invention consists in attaching the bail B to the lamp-pot C, said bail passing through loops *a* of the lantern, thus preventing the lamp-pot from becoming detached from the lantern, when the latter is carried about.

Claim.—Connecting the lamp-pot to the main body of the lantern, by the bail, substantially as set forth.

No. 14,087.—HEZEKIAH CROUT.—*Improvement in removable Flange Bars for securing the Glasses of Lanterns*.—Patented January 15, 1856.

The bar L is removable, so as to allow the glass K to be taken out or to be inserted. The glass having been inserted, the wire M at the upper end of the bar is slipped into a hole in the flange F of the frame of the lantern. Then the bar is pressed against the corner of the lantern and glass, and slipped down so as to insert the lower wire N into a hole in a little flange at the bottom of the lantern. T is a wire-handle which serves in removing the bar. The engraving represents only the lower half of the lantern.

Claim.—The application of the flanged removable bar for the purpose specified.

No. 14,741.—EMILE SIRRET & WILLIAM H. SCOTT.—*Improvement in the Method of Fastening Lamps to Lanterns*.—Patented April 22, 1856.

The nature of this invention consists in fastening a lamp B, by means of its base A, to the lamp casing E in such a manner that it shall not be liable to fall out of said casing by any sudden jerks, and this is effected by means of revolving the lamp, fastened to an axis on top of the base of the lantern, in such manner that the extending rim A of the lamp-slides over two shoulders F F inside, near the bottom of the lamp-casing.

Claim.—Constructing the lamp with the bottom extending so as to form an annular flange, which may be revolved with the lamp independently of the base of the lantern for the purpose of attaching the lamp to the lantern.

No. 14,608.—CHARLES M. GOULD and CHARLES B. LAMB.—*Improvement in Submarine Lanterns.*—Patented April 8, 1856.

The annular space T between the cylinders B B serves as a reservoir of air, to prevent by its non-conducting properties the condensation of the air passing through the lamp.

The air is forced down through the feed tube F' into the chamber J, wherefrom it passes into the house B through the perforations H H and sub-chamber Y, then passing off through the space between the arched shield x and sides of chamber A into the escape pipe F, and carrying out the gasses evolved by the combustion of the flame. The spring valves serve to equalize the air currents in their passage through the chamber, and the shield x to prevent the flame from being tapered out by the draught.

Claim.—1st. The two concentrically arranged glass cylinders having an air space between them.

2d. The air-chamber, J and Y with the communicating perforations H H and spring valves J J, in combination with the feed and escape pipes F F, constructed substantially in the manner and for the purpose herein described.

No. 14,229.—LEVI S. ENOS.—*Improvement in Oil Cans.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The compact arrangement with each other of the air tube a, the discharging tube e, the thumb piece f, the spring g, the valve rod b, and the removable cover of the can, which enables the said operating parts to be easily withdrawn from the can for examination and repairs, and as easily replaced again for service, substantially as herein set forth.

No. 14,825.—JESSE OHMERT.—*Improvement in Ovens.*—Patented May 6, 1856.

When the dampers i are closed, the heat, smoke, &c., from the fire chamber C of the furnace A will pass through the apertures b b and the flues a a, thence upwards through the apertures g g into the flues e e of the upper compartment of the furnace; the heat passing through the aperture f into the chamber D, and heating the bottom of the oven, and then passing upward through the apertures k k into the space l around the oven; the smoke escaping into the pipe F. The heat is

thus made to pass entirely around the oven, with the exception of its front end.

Claim.—The arrangement of the flues *a a*, *e e*, and space *l*, relatively, with the fire chamber *C*, and oven *F*, as herein described for the purpose specified.

No. 15,753.—HOSEA BALL.—*Improvement in Ovens.*—Patented September 23, 1856.

The hot air enters the oven from the fire-place *A* through the flues *d* and apertures *a* and *e'*, and the bread to be baked is placed upon the swinging platforms *h*, suspended on reel *f*, which can be turned on shaft *D*. When the bread is baked the platforms *h*, by turning the reel, will come in contact with the guides *h*, and the bread is discharged into the chute *g*.

Claim.—The perforated interior chamber, in combination with the rotary reel and the swinging platforms thereon, self-discharging, substantially as set forth.

No. 16,143.—JOHN P. HAYES.—*Improvement in Ovens.*—Patented December 2, 1856.

The vertical partition plate *f*, which heretofore produced the dumb flue, is set behind the oven, with an oblong opening *g* through it, on the side next to the oven, of such a capacity as will cause the direct draught *C* from the fire-range to be divided into two currents, one passing beneath the oven and up on the side *C'*, the other alongside *B* and through *g*, where it joins current *C'*, and then passes up between ovens *A* and *A'* to escape-flue *D*.

Claim.—1st. Making an oblong opening *g* through the plate *f*, which is fixed to the back of each of the ovens, substantially and for the purpose set forth and described.

2d. The arrangement of the soot-catching trough *h* at the back part of each of the said ovens, substantially as and for the purpose set forth.

No. 15,422.—JOHN P. HAYES.—*Improvement in Bake-Ovens.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Heating the flues *B B*, arranged so as to cause the products of combustion to pass from the fire chamber *A*, first into the lower flue *B* at 1, thence behind its partition *f*, and out at 1'; thence into the next flue *B*, above at 2, and out at 2', and so on, as shown by the arrows through the successive flues which may be above to the escape flue *C*; the said flues being arranged on the two sides of the casing, as described, and divided by the partition *e*, and the products of combustion being directed thereby, together with the partition plates *f* and *g* in the wall, substantially as described.

No. 14,895.—JACOB S. WILLIAMS.—*Improvement in Ovens of Cooking Ranges*.—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The employment of removable ovens B C provided with unconnected compartments *c c*, of various sizes and forms, and arranged so that said ovens may be substituted one for another, or be inserted in different positions, for the purpose of subjecting their compartments to different intensities of heat, according to the nature of the viands to be cooked therein.

No. 14,200.—GEORGE R. MOORE.—*Improvement in Fire-Pokers*.—Patented February 5, 1856.

The object of this improvement to make it practicable to poke coal-fires without the escape of ashes and dust into the room. Figures, 1 and 2 represent the poker in its backward and forward position in the ashbat, beneath the grate, which is indicated by dotted lines; figure 3 represents the upward and downward motion of the poker. The leverage of the handle A can be increased by drawing it out, as represented in figure 2. For this purpose it is made to slide in the tube B.

Claim.—The arrangements, or any of their equivalents, by which the several motions of the poker are obtained. Also the arrangement, or its equivalent, for contracting the handle of the poker at pleasure.

No. 14,591.—JOHN PLANT and CHARLES G. BALL.—*Improvement in Cooking-Ranges*.—Patented April 8, 1856.

While the whole heat from the fire-chamber on the right or left of the range passes by its diving-flue F, only the one half of the heat from the adjoining fire-chamber No 2 passes by the diving-flue on the right side of the bridge, while the other portion of the heat from No. 2 passes to the next oven by its diving-flue F, and so in succession to each oven, all receiving a portion of heat from two fires.

The inventors say: We do not claim the alternate arrangement of a series of furnaces and ovens.

But we *claim* the arrangement of the fire-chambers A, ovens B, and front plate *d*, in such relation to each other as to admit the products of combustion to pass through the flue X over the top plate of the oven, and thence down through the flue F in front of the fire-chamber to the flue G beneath the oven, substantially in the manner described for the purposes specified.

No. 15,093.—E. A. TUTTLE.—*Improvement in Registers and Ventilators*.—Patented June 10, 1856.

On the valves B B is suspended the vibrating scroll front plate F F, having its axis directly over the contiguous axes of the valves. Pins

s s, projecting from the back side of *F*, operate upon the projections *P P* raised upon the valves, as shown. By turning the vibratory front, the projections *s s* and *P P*, which are constantly in contact, operate upon each other, and throw open the valves.

Claim.—The combination of the vibrating or revolving scroll front plate *F F* and the wing valves *B B*, operating in contact by means of cast or fast projections upon each at the points of connexion, without the use of any intervening parts or pieces, and substantially as described.

No. 14,754.—SAMUEL HUFFMAN, assignor to Himself and JAMES D. BROWNE.—*Combined Shovel and Tongs*.—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The flange *b* and the plate *a* when combined with a pair of tongs, for the purpose of forming an instrument capable of being used either as a shovel or tongs.

No. 14,505.—CHARLES JONES.—*Improvement in Ash-Sifters*.—Patented March 25, 1856.

The object of this arrangement is to cause the sifter to vibrate with a compound motion.

Claim.—The use of the sieve *H*, in combination with the double-acting cranks *G* and rods *J* for suspending the sieve, for the purposes and in the manner of arrangement of parts in any suitable ash-box *A*, substantially as herein set forth.

No. 14,609.—SAMUEL HARRIS.—*Improvement in Machines for Sifting Coal and other articles*.—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The providing of the pins *a a a*, on the underside of the cover *A* of the sifting-box *B*, in such relation to the bottom of the vibrating sieve *C*, that when the top of the box is closed and the sieve vibrated back and forth, they shall separate the material being sifted, and thus improve and facilitate the sifting operation; and when the top of the box is opened, they shall be out of the way and thus allow for the convenient removal and replacement of the sieve.

No. 14,567.—STIMMEL LUTZ.—*Improvement in Spark Arresters*.—Patented April 1, 1856.

The smoke together with the sparks ascending the smoke-pipe *A* strike and beat the plate *D*, and are deflected through the branch pipes

B B, from which they pass into the reservoir C; the sparks are here, by means of cavity G, in a great measure precipitated upon plate D and consumed. The remaining cinders pass with the smoke into the annular space E, where they are extinguished by the vapor of condensed steam issuing from the exhaust pipes N N. The conical space P receives the moistened ashes and cinders, while the smoke proceeds upwards. Any cinders which may be carried up are arrested by the partition M.

The inventor says: I do not claim simply a cap or deflector for arresting the sparks while the smoke proceeds onward, nor do I claim partitions or caps of wire gauze, or perforated sheets of metal alone.

But I *claim* the combination of the plate D, branch-pipes B B, and the cap or reservoir C, provided with a central cavity G, or its equivalent, in its upper end, arranged in the manner and for the purposes set forth.

No. 14,398.—PETER C. GUIOU.—*Improvement in Spark Conductors for Locomotive Trains*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not confine myself to any exact form or dimensions; I do not claim the smoke pipe, or funnel, or frame, or the yoke, or the springs, either of them by themselves.

But I do *claim* the yoke Y with the springs S S and the frame F, as arranged, so that the pipe shall have free space and liberty to play, by the yielding of the spring to accommodate the rocking motion of the cars, or the up and down motion without cramping or injuring the pipe, and also to give room for the back and forward motion allowed by the car coupling, for the purpose and in the manner as above set forth.

No. 14,318.—JAMES T. KING.—*Improvement in Domestic Steam Generators*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The combination of a water tank C, steam chamber D, and steam generator B, connected together in the manner and for the purpose specified, so that the height of water in the water tank above the orifice of the pipe leading to the steam chamber shall always regulate the pressure of the steam, while there will be a free escape of steam as soon as the water in the water tank falls below said orifice.

No. 14,312.—STEPHEN J. GOLD.—*Improved Air Cock for Steam Heating Apparatus*.—Patented February 26, 1856.

The channel *b* being open for the passage of air from the radiator, (see letters patent obtained by the inventor in 1854 and 1856,) the radiator will fill with steam and the air escape from perforation *e*.

When the radiator is entirely full, steam will issue from channel *b*, and coming in contact with the bottom of cup *c* will at once vaporize the fluid contained therein, causing it by expansion to lift the centre of the flexible cover *i*, and force it against the inner face of the cap *d*, so as entirely to close the perforation *e* and prevent the escape of steam; the radiator is thus permitted to fill with steam, and the air-opening automatically closed. The cooling of the apparatus reopens the cock.

Claim.—The automatic regulation of the air cock by the secondary action of a fluid which vaporizes at a low temperature, substantially as set forth.

No. 15,495.—JOHN SHOPLAND.—*Improved Combined Steam and Hot-Air Cooking Stove.*—Patented August 5, 1856.

The nature of this invention consists in the introduction of steam into ovens whose sides are formed of metallic plates, for the purpose of creating in the same a certain degree of moisture, which prevents the sudden formation of a crust upon the articles to be baked. In the illustration *a* represents the oven, *b* the steam boiler, and *c* the conducting pipe.

The inventor says: I am aware that a pan of water has been placed in an oven for moistening the air therein, and that steam has been introduced into a chamber for steaming meats and vegetables. These I do not claim; but I *claim* the arrangement of the boiler outside and independent of the oven, so as to have the hot air and steam at variable temperatures, and mix them at pleasure, or as the character of the cooking may require.

No. 14,461.—JAMES B. MABURY.—*Improvement in Stoves.*—Patented March 18, 1856.

The engravings and the claim fully explain the nature of this invention.

Claim.—The surrounding the fire-place of a stove of any size or form with at least two or more air-jackets *o* and *n*, standing in no communication with each other, admitting no currents of heated air to circulate through them, and each of them provided with only one valve *f* and *g*, constructed and operated as described, for the purpose of controlling the radiation of heat from the outermost shell of the stove, without interfering with the fire in the interior thereof.

No. 15,984.—S. T. SAVAGE.—*Improvement in Stoves and Furnaces.*—Patented October 28, 1856.

The combustible gases evolved from the coal in the fire chamber *a* will fill the upper part of said fire chamber. The atmospheric air supplied to the air chamber *j* through the apertures *o* becomes heated in said chamber, passes through the small apertures of the cylinder *n*, descends into the chamber *h*, and thence through the apertures in the

plate *i* to the upper part of the fire chamber, and there mingling with the heated combustible gases evolved from the coal, inflames them, producing an intense heat in the upper part of the fire chamber.

The inventor says: I am aware that many stoves and furnaces have spheric air above or beyond the coal, to inflame the combustible gases been made with a view to economize fuel, by the admission of atmosphere evolved from the coal under combustion.

I do not wish to be understood as making claim broadly to the use of an air chamber to supply air to the combustible gases above or beyond the coal or other fuel.

Nor making claim to the combination of a throat or narrow aperture in the flue space supplied with air for the combustion of the inflammable gases.

I *claim* the use of the throat aperture or passage surrounded by an air chamber and pierced with numerous small holes, through which atmospheric air passes in numerous small jets to the said throat, substantially as described, when the said throat is located between the fire chamber and a flue chamber leading to the exit pipe or chimney, and combined with a perforated plate interposed between the said throat and the fire, substantially as and for the purpose specified.

No. 16,268.—THEODORE COOK.—*Improvement in Stoves and Furnaces.*—Patented December 23, 1856.

The heat from the fire-chamber A passes up through the pipe *e*¹ into the part *c* of the chamber C, and thence through the passages J into the case E, and then into the pipe *k*; but when a direct draught is required, the heat passes up through the pipe *e* direct into the upper part of the case E. The cold air to be heated passes up through the pipes G into the part *a* of the chamber C, and through the pipes *f* into the case D, thence upward through the pipe *g*. Cold air also passes directly into the case D through openings K. The heated air is conveyed through pipe G to the desired apartments.

Claim.—The fire-chamber or pot A, chamber C, and cases D E, provided with the necessary pipes and arranged relatively with each other, as shown and described for the purpose specified.

No. 14,362.—DENNIS G. LITTLEFIELD.—*Improvement in Stoves and Furnaces for Railroad Cars and other purposes.*—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

The grate is arranged around a solid centre N, for the purpose of burning the coal around the edge or in the enlargements E of the furnace, and not in the centre. The central cylinder R is to be filled with coal through the top of the stove, after removing cover U¹, which latter is again to be put in its place as soon as the cylinder has been filled.

Claim.—A fire-pot or furnace, provided with a series of enlargements or projections on its side or sides, commencing at and extending upwards from the grate, to contain the fuel while it is being burned, or during its consumption, substantially as described, open or provided with openings at the top for the escape of the gaseous products of combustion.

Also a grate made around a solid centre or disk, substantially as described, for the purposes set forth.

Also a supplying cylinder in combination with the above described fire-pot or furnace and grate, or either of them.

No. 14,467.—MERRITT PECKHAM.—*Improvement in Sectional Fire-Pots for Stoves and Furnaces.*—Patented March 18, 1856.

The sections A are fitted together at their inner parts *b* by means of the projections *d*, which fit into the recesses *c*. An iron ring B is fitted into the annular groove formed by the recesses *e* in the upper edges of the sections A. The projection *f* of the base C fits into similar recesses at the lower end of the sections.

The inventor says: I do not claim forming a fire-pot of sections or parts, irrespective of the construction and arrangement as herein shown.

But I *claim* forming the fire-pots of stoves, furnaces, &c., of sections A, when said sections are constructed and secured together substantially as herein shown and described.

No. 14,648.—WILLIAM W. BINNY.—*Improvement in Coal Stoves.*—Patented April 15, 1856.

By closing the register B, and opening the damper H and the draught-door *F*¹ of the ash-drawer, a direct draught is obtained, as indicated by the dotted arrows. By closing the damper H, the draught will take the course indicated by the arrows. By closing the draught-door *F*¹ in the ash-drawer F, and opening the register B, the combustion will be slow, as the fire will be supplied with air at its upper surface only.

Claim.—The partition G placed within the cylinder C and provided with a damper H; the vertical tube or pipe K, also within the cylinder C; and the hollow base A, provided with a register B; when the above parts are arranged as herein shown and described for the purposes specified.

No. 14,278.—ABNER BURNHARN.—*Improvement in Cooking Stoves.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim the placing of an air-chamber or air-flues around the fire-chamber, or over the upper fire-flues of toves, nor the carrying of an air-passage or radiator through the

smoke-pipe or chimney, as separate and distinct parts of the apparatus, as each of them may be found in some existing stoves.

I *claim* the combination of an air-chamber G, surrounding the fire-chamber F, having inlets *d* and *f* for the admission of air from without, with an air-flue lying between the top C of the fire-chamber with its flue and the top plate B of the stove, together with an outlet from the same by a pipe or radiator placed within the smoke-pipe or flues, substantially as set forth in the above specifications.

No. 15,023.—WILLIAM B. TREADWELL.—*Improvement in Cooking Stoves.*
—Patented June 3, 1856.

The under side of the flues *l l* forms part of the oven-top, so that when the damper *e* is closed, and the draught passes entirely around the oven, its upper part is heated by the products of combustion passing over the plate *d* and also through the tubes *l l*, after passing entirely around the oven; but when the damper is open, the oven will be heated by radiation through plate *d* all around the tubes *l l*.

Claim.—Connecting the flue in front of the oven *b* with the exit-pipe at *m m* by means of a tubular flue or flues *l l*, at the top, and forming part of the top of the oven, substantially as specified, in combination with the plate which forms the residue of the top of the oven.

No. 15,318.—HENRY S. GEORGE, assignor to Himself and GEORGE GRATTON.—*Improvement in Cooking Stoves.*—Patented July 8, 1856.

Cold air passes upward through the side flues 2 and centre flue 18; when it comes in contact with the heated surface of the fire-plates, it becomes highly heated and passes through the chamber 5, over and around the fire, and also through the elbow on the top of the centre flue. The dampers 8 and 9 serve for the purpose of turning the current of hot air either over or under the oven; by closing both these dampers and closing the cold air fire-draught, it is obvious the fire-draught will then be supplied through the flues 2 and 18 with heated air.

The inventor says: I disclaim, when separately considered, the passing of hot air between the oven plates, and the passage for the products of combustion; also the placing of the air-flues through and around the fire-chamber, and the supplying of the fire-draught with heated air.

But I *claim* the arrangement, substantially as herein set forth, of the air flues through and around the fire-chamber, and the hot-air channel 6, between the oven plates and the passage for the products of combustion, with the dampers 8 and 9, for supplying the fire-draught with hot air.

No. 15,952.—SAMUEL PIERCE.—*Improvement in Cooking-Stoves.*—Patented October 21, 1856.

The operation of this apparatus is as follows: As soon as the plates of the fire-box and upper flue become heated, they communicate their

caloric by means of slats x to the cold air of the air-chamber lying next to them in A and B, which rises to the top of the chamber. As the caloric of the air thus warmed is absorbed by the plates of the oven, the cooled air descends, taking the coolest passage C, and so drops down into D and thence into E, the lowest and coolest chamber, whence it rises to take the place of the air which, having been rarified, has passed up through A to B.

Claim.—The flanges or slats $x x x$, for the purpose and in manner and form as described and set forth.

Also, the method of constructing the ash-pit and lower oven bottom plate in one piece, with holes $y y y$, for the passage of air, in manner and form as set forth, for the purpose of communicating a greater degree of caloric to the air in the air-chamber surrounding the oven.

Also, the employment of the dumb-flue M, lying within the upper fire-flue, and forming a part of its lower plate, and communicating with the elevated oven by a passage opening into its bottom, substantially as set forth.

No. 15,971.—JOHN W. H. DOUBLER.—*Improvement in Cooking Stoves.*—Patented October 28, 1856.

The engraving represents a front view of a stove, with the improvements relating to the invention as described in the claim, from which the nature of this invention will be understood.

The inventor says: I do not claim as new the sliding grate, nor yet the method of elevating or lowering it by means of rack and pinion, or equivalent devices.

Neither do I claim the mere use of a draught slide or damper to a stove door.

But I *claim* the arrangement of the upper stationary doors A, set back as described, and lower set of doors B, the latter being attached to the rising and falling grate, and hung and arranged so as to slide upwards over or against the upper doors when elevating the grate to raise or reduce the size of the fire, said lower sliding doors being provided with a damper or slide m ; whereby the same relative position of front draught opening to the fire is maintained, whatever the varied set in altitude of the sliding grate, and whereby, while a large amount of door surface is provided the furnace or stove, but a portion only of the weight of said doors has to be lifted in elevating the sliding grate.

No. 14,720.—WILLIAM E. HAYES.—*Improvement in the Arrangement of Dampers for Cooking-Stoves.*—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The damper J and K, connected and operated by the lever N and damper-rod M, in the manner and for the purposes specified.

No. 14,356.—B. F. FOERING.—*Improvement in Supplementary Grating for Stoves, Furnaces, &c.*—Patented March 4, 1856.

After the supplementary grate D has been inserted, the usual grating C may be removed, cleaned, and reinserted.

Claim.—Cleaning or removing foreign substances, such as slate, cinders, clinkers, &c., from stoves, furnaces, or other heating devices, in which anthracite coal is burned, by means of the supplementary grating D, applied to the stove or furnace or inserted within it, substantially as herein shown and described.

No. 14,888.—JOHN STARKETT and NEWTON J. WIER.—*Improvement in Gas-Stoves.*—Patented May 13, 1856.

The distributor plate D is composed of three round plates, leaving a narrow space between its outer edge and the sides of the chamber. This plate has also a hole in its centre, through which the gas is intended to pass. G represents a fine wire-netting. The mixed gas and air passing through this is to be ignited on the top, when a flame will spread itself very evenly over the whole surface of G, consuming the gas very effectually.

The inventors say: We do not claim the chamber C, with its wire-covering, for the purpose of mixing air with gas previous to burning, nor their combination with the outer case A, as these devices are already known.

The plate D reflects the heat that strikes upon it, and thus concentrates it all upon the utensil which is being heated over the surface of combustion.

Claim.—1st. The distributor plate D.

2d. The combination of the distributor plate D, the chamber C with its net-work covering, and the exterior cases A and B.

3d. The combination of the plates or registers H H with the net-work covering of the chamber C, for the purpose of varying the surface of combustion to suit the various utensils to be heated.

No. 14,064.—HIRAM B. MUSGRAVE.—*Improvement in Gas-Cooking Stoves.*—Patented January 8, 1856.

The funnels *b* and *c*, being open at bottom, admit a nozzle *e* of a gas-burner. This nozzle has its vents *f* arranged around its sides; the pipe *g* bearing the nozzle is hinged at *h*, so as to be capable of being raised or lowered at will. When it is desired to have an annular flame, the nozzle is lowered so as to bring the vents between the funnels *b* and *c*. If a concentrated flame is required, it is raised, and the vents are brought inside the funnel *e*. A wire gauze *d* is stretched across the double-funnel for the gas to pass through.

Claim.—In combination with the concentrically arranged gas deflector *b* and *c*, the gas-burner, with lateral vents, and capable of vertical adjustment or equivalent devices, for the purposes specified.

No. 14,940.—JOHN MAGEE, assignor to Himself and WILLIAM J. TOWNE.—*Improvement in Ventilating Registers and Dampers for Stoves.*—Patented May 20, 1856.

The more the valve *d* is opened the greater will be the passage for the admission of air into the pipe, and the more will it shut off or diminish the flow of the products of combustion through the pipe *I*, thereby not only aiding in checking the draught, but also increasing the ventilation of the room and supplying air to the flue pipe.

The inventor says: I lay no claim to the invention of having an air passage leading into the downward draught flue, and provided with a door opening outward; nor do I claim the principle of applying a damper so that it may be common to two or more openings or flues.

But I *claim* combining with or arranging in the flue-pipe *I*, when the stove is constructed with two discharge pipes *H I*, a rectangular box or chamber *b*, formed with an opening *c*, and so as to receive within it, and permit to operate, a rectangular valve or damper *d*.

VI.—STEAM AND GAS ENGINES.

No. 15,742.—WILLIAM P. PARROTT.—*Improvement in Locomotive and Steam Boiler Furnace.*—Patented September 16, 1856.

A represents the fire-box; B a recess within the boiler, in which is placed the cone C. Through this cone are passed the tubes *a*, through which the smoke and gases from the fire-box pass. The interior of the cone is supplied with air through the pipe D; through the surface of the cone, at the points *a'* where the tubes *a* pass through the cone, there are openings concentric with the tubes, through which the heated air is permitted to pass from the cone to the recess in front of the tube plates. This heated air enters the recess in finely divided streams and in immediate contact with the currents of smoke and gas passing through the tubes *a*, which are thus consumed directly in front of the tube plate.

The inventor says: I am aware that perforated plates for the admission of air have been used in connexion with hollow bridges; but in working with a rapid draught the smoke and gases in the fire-box or furnace are not properly mixed with the air so as to complete the combustion. I do not, therefore, claim any such combination or arrangement of parts; but I *claim* the hollow box or cone, having tubes for the passage of the smoke and gas, and apertures for the admission of heated air, so arranged, in the manner substantially as set forth, as intimately to mix the two for the purpose described.

No. 14,230.—WILLIAM E. EVERETT and M. MINTHORN THOMPSON —*Improvement in Devices for Removing Incrustations of Boilers.*—Patented February 12, 1856.

When the boiler is out of use and emptied of the water, all the passages leading to and from the boiler are to be closed, except one or more, through which steam, furnished by a supplementary boiler, is introduced. This steam fills the boiler and condenses upon the surfaces thereof and on the scale deposited upon them, and after a greater or less time softens the scale, and, as the inventor states, often loosens it so completely that it falls to the lower part of the boiler, whence it may be removed afterwards. The inventor has found that steam of about one atmosphere pressure had to be employed eighteen hours to soften sufficiently an ordinary marine boiler scale of a quarter of an inch in thickness.

Claim.—The herein described method of softening or softening and removing the deposit upon boilers, commonly known as "scale;" namely, by exposing the same to the action of steam, substantially in the manner as herein specified.

No. 14,408.—LEONARD PHLEGER.—*Improvement in Steam Boilers.*—Patented March 11, 1856.

By the combined action of the arched water space $a b c$, the water space $M N$, and the water table $L L^1$, the flame and particles of fuel and ashes from the furnace are reverberated down upon the water table $L L^1$, instead of being thrown against the mouth of the tubes T .

Claim.—1st. The arrangement of the arched water space $a b c$, so that the boiler may be suspended near to the track, in the manner and for the purposes substantially as hereinbefore mentioned.

2d. The arrangement of the arched water space $a b c$, the water space N and M , and the water table $L L^1$, in combination, so that the flame and heat will be reverberated in the manner and for the purpose substantially as herein before described.

No. 14,523.—O. M. STILLMAN and STEPHEN WILCOX, jr.—*Improvements in Steam Boilers.*—Patented March 25, 1856.

The reservoir being filled with water to the line x , the coils e and e^1 will also be filled to the top; the draught ascends between the reservoir and inner coil, and passes down the annular spaces between the coils to the outlets $s s$. The steam and particles of water pass into the steam space of the reservoir C , above x . One of the coils e terminates so as to discharge through the expanded mouth of p , and in doing so forms a partial vacuum behind. Thus, p will be exhausted and the steam forced through the coil e^2 . When the engine is at work the steam passes off with such velocity that it escapes through the shortest passage p , when the valve r closes and compels all the steam to pass through the coil. The steam is separated from the water by the spiral passage i ; the water accumulated in k flows out through pipe o .

Claim.—1st. Such arrangement of a series of vertical coils e e^1 e^2 , &c., of different diameters, that, when placed one within the other, spaces shall be left between, thereby forming flues which allow the fire to act upon each of the said coils as described.

2d. The arrangement, in combination with the coils, of a reservoir or boiler placed within the inner coil in such a manner that the greatest effect of the heat upon both will be obtained, as set forth.

No. 14,555.—F. P. DIMPFEL.—*Improvement in Steam Boilers.*—Patented April 1, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—The arrangement of the tubes and the connexion of a receptacle t , as herein described, for consuming the fine particles of coal which are carried by the force of the blast or draught from the fire chamber into the flues, the said receptacle being placed below the bottom of the main flue, and communicating therewith, and between the fire chamber and a check or deflector v in the main flue to check the momentum of the particles of coal, and cause them to drop into the receptacle, to be consumed as described.

2d. Forming a single flue in the middle for the passage of the products of combustion from the main flue f , surrounding the water tubes a to the smoke-box g , by securing the rear ends of the water tubes to two tube shuts d and d^1 , one-half to each of said tube shuts, and leaving a space e between the two tube shuts for the passage of the said middle flue, when this is connected with a check or deflector g^1 , placed in the main flue among the water tubes, and in front of the said middle flue, as described, to prevent the products of combustion from taking a direct course to the said middle flue.

3d. Arranging the bent up ends of the water tubes, where they are connected with the crown shut b of the furnace, in a series of double longitudinal rows, and leaving spaces between the double rows of greater width than the external diameter of the water tubes, as described, to admit of taking out and inserting the tubes, whilst in other respects the said tubes may be placed as near to each other as may be desired.

No. 14,721.—C. B. HOARD.—*Improvement in Steam Boilers.*—Patented April 22, 1856.

The flue F is fitted into the groove H , in the head A^1 , around the opening D^1 , and held therein by means of screw brackets I I . The other end of the flue is provided with a flange G , which is fitted to the head A , and fastened by screws or bolts.

Claim.—Closing the openings or man-holes in one or both heads A A^1 of the boilers, by the insertion of a flue F , which may be conveniently removed and replaced, substantially as described.

No. 15,803.—DAVID H. FOWLER.—*Improvement in Steam-Boilers.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of the central flue *k*, with the exterior flues *e* and apertures *g g*, substantially as and for the purposes herein described.

No. 16,262.—JOHN ARMSTRONG.—*Improvement in Steam Boilers.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The series of cylinders *A A*, placed vertically in rows, with a series of horizontal flues *a* passing through each row, and lying in the vertical plane cutting the centre of each cylinder—the space between each row of vertical cylinders being closed at the top by a horizontal flue boiler *B*, all the vertical cylinders being connected together at the top and the bottom, and the furnace *M* being located in one end of the space between the rows of vertical cylinders, the whole being arranged substantially as and for the purpose described.

No. 14,033.—THOMAS STUBBLEFIELD.—*Improvement in Steam Boiler Alarms.*—Patented January 1, 1856.

A represents a fragment of the upper side of the steam boiler. When the boiler is filled to the proper height with water, the float *G* and the lever *F* will be raised to their highest position and the valve closed. When the water lowers, the float will sink, but without disturbing the valve until it has descended far enough to let the upper extremity 2 of the slot *n* rest upon the pin *m*, when the weight of the float will depress the lever *F*, raise the heavy end *c* of the lever *D*, and open the valve to allow the steam to escape and sound an alarm, through the steam-whistle, of a deficiency of water.

Claim.—The combination of the flexible lever with the float and alarm valve, substantially in the manner and for the purpose herein set forth.

No. 16,092.—ALLEN LAPHAM, assignor to Himself and STEPHEN WILKES.—*Improvement in Combined Steam Boilers and Kettles.*—Patented November 18, 1856.

The water in the kettle *C* is heated by means of steam in the boiler *B*, which latter is heated by means of the flues *E* leading from the fire-box. The reservoirs *D* are filled through the feed pipe *f*, and the valves *F* serve to admit steam to said reservoir, while the feed-water enters the boiler through the valves *G*.

The inventor says: I do not claim surrounding the kettle with steam as that has been done before.

But I *claim* the use of the kettle C, surrounded by steam, as set forth, in connexion with the boiler B, the reservoirs D D, with valves F F and G G, or their equivalents, on the upper and lower sides, and the induction pipe *f*, arranged, constructed, and operating in the manner and for the purpose set forth and described.

No. 15,870.—PLINY E. CHASE.—*Arrangement of Means for Regulating the Draught of Steam Boilers.*—Patented October 14, 1856.

When the steam boiler B is cool, the damper *a* is closed. Air enters at N, and passes through the fire-box F, rapidly increasing the combustion of the fuel. The flame, smoke, and heated gases are forced over the upper edge of the fire-box F, and, being prevented by the curved plate *l* from passing directly into the flue L, circulate in the space H, giving off their heat to the extended surface of the boiler, and rapidly generating steam. As the pressure of the steam increases it causes the water to rise in the tube C, elevating the float *f*, which, by its connexion with the dampers *d* and *a*, closes the opening N and the flue L, at the same time opening the flue L¹. The draught will thus be reversed, and the heated products of combustion will be drawn from the annular space H, and the surface of the boiler, down through the fire-box and the flue L¹, reducing the temperature of the boiler, and consequently the head of steam.

Claim.—The apparatus substantially as described, when constructed and arranged so that the action of the steam in the boiler B, when at or above the maximum pressure desired, will cause the draught through the fire-box F to be reversed, and pass down through the fire, and again resume its former course in the opposite direction when the pressure is reduced to the minimum, for the purpose specified.

No. 15,579.—JOHN S. SHAPTER.—*Improved Arrangement of Steam Cylinder within the Boiler.*—Patented August 19, 1856.

The nature of this invention consists in enclosing a steam cylinder G in a steam chamber C, separated from the boiler A, by a partition B, for the purpose of making a steam engine compact and portable. The supply of steam from the boiler can be shut off by means of a valve D, and the cylinder and its attachment can be got at through a man-hole F.

The inventor says: I do not claim enclosing a steam cylinder in a steam boiler, as that is known and used.

But I *claim* enclosing a steam cylinder in a steam chamber separated from the body of the steam boiler, where the supply of steam can be shut off from the chamber by a valve for that purpose, and where the cylinder and its attachments can be got at through a man-hole, when the supply of steam to the chamber is so shut off.

No. 14,449.—JACOB FRICK.—*Improvement in Feed and Blow-off Apparatus for Steam Boilers.*—Patented March 18, 1856.

C screws into and communicates with the steam boiler, and D forms the blow-off passage. Should the plug have been turned so as to obstruct the passage of the feed-water to the boiler, the pressure will cause the water to act on the safety-valve M, and, passing through *n*, will operate against the spiral spring *w* in pressing down the piston *q* until a portion of the water can escape down the grooves *s*, causing at the same time the bell to ring.

The inventor says: I do not claim the combining of a check-valve and stop-cock in one instrument, the same being in common use.

But I *claim*, 1st, arranging substantially in the manner set forth a check-valve F and stop and blow-off valve E, in one instrument, for steam boilers, for the purpose of avoiding the attachment of the separate and distinct connexion hitherto employed for the same purpose.

2d. The pressure-valve M, with its weighted lever O, as connected with the alarm-valve, and as arranged with the check and stop-valve, the whole being constructed and operating substantially in the manner and for the purposes herein set forth.

No. 14,191.—THOMAS FIRTH.—*Improved Feed-Water Apparatus to Steam Boilers.*—Patented February 5, 1856.

The lever 10 works freely on its axis, and strikes the pins 29 29, which moves the valve 12 either way, as the case may be, until the pin 30 (which is attached to valve 12 the same as pins 29) passes the vertical centre line of the valve, when the spring 18 attached to the pin forces the valve into its right position, so that steam can be admitted to and from the steam cylinders through pipes 17 by the openings 24 in the valve, and escape out of the opening 27 in the valve-face into the escape-pipe 13.

Claim.—The arrangement of the pistons 9 9, beam 10, pins 29 29, (attached to the valve 12,) and spring 18, or their equivalents, for giving motion to the steam-valve 12 for admitting steam to and from the steam cylinders 4 4 and pipes attached thereto.

No. 16,206.—ERASTUS W. ELLSWORTH.—*Improvement in Feed-Water Pumps for Steam Boilers.*—Patented December 9, 1856.

The pipe X forms a communication between the steam cylinder D and the steam boiler at the water line; when the water in the boiler is below that line, steam circulates through X, and when above it, water. The difference in the densities of these two fluids causes the engine to be more or less held in check and impeded according to the height of the water in the boiler; and the feed-pump piston I, connected to the steam cylinder piston E, is thus regulated in its operation:

The inventor says: I *claim* the method of making a steam pump, when applied to maintaining the level of water in steam boilers, or of

other liquids in similar vessels, regulate its own speed, by causing the liquid, when at or above the proper level, to apply resistance to the motion of the engine of the pump, that resistance being caused by the circulation of said liquid back and forth through a narrow passage communicating between the above mentioned boiler or vessel and a variable cavity operated by said engine, said variable cavity being constituted by a piston and plunger working in a cylinder, as described, or in any similar manner, whereby substantially the same result is accomplished.

I do not claim the connexion of the steam-pipe or a pumping engine with the boiler at the water line, whereby steam or water, or both fluids, pass constantly from the boiler and are exhausted through the engine, and by their different densities regulate the speed of the engine, for the pipe which conveys the steam expended in working my engine has not such a connexion, but my claim, as set forth.

No. 14,959.—F. A. HOYT.—*Improvement in Floats for Steam Boilers.*—Patented May 27, 1856.

The float A is charged with compressed air by means of valve e. The resisting force of the float being thereby increased, a very light float can thus be constructed and applied directly to the indicating apparatus, and without the necessity of counterbalancing the float.

Claim.—Charging the float with compressed air, for the purpose substantially herein specified.

No. 16,173.—WILLIAM S. BLAKE.—*Improvement in Floats for Steam Boilers.*—Patented December 9, 1856.

When the water within the boiler A is heated so as to make steam, that within the float will be correspondingly raised in temperature and vaporized, so that the pressure within the float B will be sufficient to balance that of the steam on its external surface; this arrangement permits the construction of floats of very thin material.

The inventor says: I do not claim the principle of a steam-gauge hollow-ball float, or sphere, made air-tight, and filled with compressed air, or gas forced into it by external pressure, before such float is used, or placed within the boiler.

Nor do I claim a hollow air-tight box or globe, partly filled with water or a liquid, and separate from and without reference to the above mentioned application and connexion of it with a boiler, so as to be operated by it in manner described.

But I *claim* the specified application of a steam-gauge vapor-generative float, constructed substantially as explained, with a closed steam boiler, and so as to have its contents vaporized by the heat of those in the boiler, in the manner, and for the purpose of resisting their pressure externally on the float, as set forth; the boiler thus serving, by the heat of its contents, to produce the agent by which the pressure of the steam on the external surface of the float is neutralized.

No. 15,424.—E. T. INGALLS.—*Improvement in Steam Boiler Furnaces.*—Patented July 29, 1856.

The inner cylinder *e* is filled with fuel and fire applied to the same at the grate. When the coals become heated as high up as the draught holes *o o*, then the heated gases pass through said draught holes up through the flues *k*, and finally escape through the flue *n*. The gases are prevented from escaping direct through the flue *n* by means of the partition *l* provided with small draft holes *p*.

Claim.—The improvement in steam boilers which consists in arranging a fire pot of sufficient depth to contain a large quantity of fuel, within or about and underneath the boiler, placed concentrically therewith, in such a manner as to keep the fuel which is in contact with the lower part of the furnace in a full state of combustion always, as set forth.

No. 15,825.—ASBURY M. SEARLES.—*Improvement in Steam Boiler Grates.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

Claim.—1st. The described conical grate *k n o*, formed by diverging radial bars, and having the described recurved margin, or otherwise, or equivalent devices, for the purposes explained.

2d. In the described connexion with a conical grate, the radial series of pokers *p*, or its equivalent, having the explained shearing action between the grate bars.

No. 14,835.—THOMAS SLOAN.—*Improvement in Heating Feed-water Apparatus for Steam Boilers.*—Patented May 6, 1856.

The water is driven by the feed pump through the pipe *D*, and descends into the purifying vessel *P*, where the level remains the same as in the boiler, the upper part thereof and the chamber *G* being filled with steam at the same pressure and temperature as in the boiler. In descending through the steam in the purifying vessel, the water is heated so as to cause the precipitation of the greater part of its impurities; and as the upper part of the body of water in the purifying vessel is heated by the steam in the chamber *G*, it is kept heated above the boiling point, while that in the lower part is cooler, and the precipitation is there finished; and the mud is caused to settle at the bottom of *P*, while the mineral matter is caused to encrust itself upon the sides of the upper part of said vessel.

Claim.—1st. A vessel separate from the boiler but communicating both with the steam and water chambers thereof, in which the water, previously to its entrance to the boiler, is heated by passing in a thin stream through the steam in its upper part, and also by the contact of the steam with the top of the body of water contained therein.

2d. The arrangement of the purifying vessel, the pipe *D* with its funnel mouth, the internal heating chamber *G*, and the pipes *E* and *F*

No. 15,494.—JOHN R. SEES.—*Improvement in Heating Feed-water Apparatus for Steam Boilers.*—Patented August 5, 1856.

The feed-water passes through pipe D into the valve chamber E; after having raised the lower valve of the double poppet valve L, it passes up the pipe F through G, J, H, and I, into the boiler B. The water in the pipes J, by means of their small diameters, is heated in less time than would be required if one pipe only of a larger diameter containing the same area were used. If the feed apparatus is not in motion, then the water in the boiler presses through pipe K on the upper valve of rod L, and closes the lower valve, filling the pipes J and preventing them from being overheated.

The inventor says: I do not claim heating the feed-water for boilers in pipes placed between the feed pump and boiler; neither do I claim heating the feed water by the escape heat of the boiler.

But I *claim* the heating pipes J and the branch pipes G and H, with the chamber containing the double-acting check valve L, and the circulating pipe K, all arranged below the water line of the boiler, in the manner and for the purposes set forth.

No. 15,324.—BENJAMIN F. BEE.—*Improvement in means for Controlling the Feed-Water Apparatus of Steam Boilers.*—Patented July 15, 1856.

W is a shaft carrying the shifting dogs M and the reversing cam I; s is the shifting stud placed on the front of the main wheel C, which as it revolves may come in contact with the dogs M. S and T are studs or blocks placed upon the segment F; S being stationary and T adjustable by means of a set-screw. When the lever E is depressed in raising the float A, S comes in contact with I, and restores the shaft and its fixtures to the position as shown in the drawings. If the water is sufficiently high in the boiler B so that the float A in its fall does not cause the stud T to disturb I, the shaft will remain in that position, and as the shifting stud s revolves it will engage the lower dog of M, thus causing the shaft W to slide through its bearings, taking with it the shifting lever t, which acting upon the shifting bar y, will cause the belt to run upon the loose pulley x, and the pump or feeder will stop. If, however, when the float fell, there was a deficiency of water according to the adjustment T, then I will be depressed and the stud s will engage only with the upper dog of M, and the pump, &c., if stopped, will be started by a counter process.

Claim.—Controlling the feed-water apparatus of steam boilers by the float A, and the intermediate means, or their equivalents, between it and the feed apparatus, and connected with the counter-balance L, or not.

No. 15,617.—LUCIUS PAIGE.—*Improvement in Water Gauges for Steam Boilers.*—Patented August 26, 1856.

The steam and water passes from the boiler C through the passages D and E into the annular chamber B, which surrounds the gauge A.

The object of the auxilliary chamber B is to diminish such causes of disturbance of the proper operation of the tube A as are produced by the evolution in a tube attached directly to a boiler, and by incrustation and other causes. The gauge A is composed of two concentric sections of glass tubes h^1 and h , mounted in the grooves of metal rings, so that in case of breakage of one tube the gauge may still remain in working condition.

The inventor says: I do not claim combining with the gauge A a separate receiving chamber B, arranged between it and the boiler and connected to both by pipes; but I *claim* applying the said chamber B, or arranging it with respect to the gauge, so that it shall partially surround the same, and form a niche or recess H to receive such gauge and radiate heat upon it towards its axis, for the purpose specified; the said recess H being provided or not, as the case may require, with the curved cover or slider I, made to operate therewith, substantially as set forth.

I also claim constructing the gauge in tubular sections of glass or other suitable transparent material, in combination with providing the same with a clamp frame or apparatus and connexion rings and cups, substantially as described.

No. 16,054.—JOHN C. HARRIS.—*Improvement in Water Gauges for Steam Boilers*.—Patented November 11, 1856.

The nature of this invention consists in employing a medium specifically lighter than water, such as oil, within the gauge chamber S, to float upon the water and to carry the float m of the gauge n ; so that said gauge may indicate the height of the water in the boiler b , irrespective of the varying density of said water, due to the concentration of mud or saline matter.

Claim.—The arrangement of the float chamber S, the stop-cock s , and the blow-off cocks, to adapt the gauge to the employment of oil, interposed between the float and the water to carry the float, substantially as set forth.

No. 16,182.—F. A. HOYT.—*Improvement in Water-Gauges for Steam Boilers*.—Patented December 9, 1856.

This invention consists in placing the moving parts of the indicating apparatus, consisting of float H and rod I, which are connected with dial m by means of rod k and shaft f , within a separate dry steam chamber L, so arranged over a detached vessel C, outside the boiler, that no water is at any time admitted to it, whereby the shaft, which passes through the outside, is entirely removed from the influence of sediment.

Claim.—The described arrangement of the outside vessel C, the dry steam chamber L, and the float H, having a direct communication with the indicating hand, and operating in the manner substantially as set forth.

No. 16,130.—UEL WEST and ABNER MILLS.—*Improvement in the Construction of Tubular Condensers and Heaters*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The connexion of the ends of the tubes B B with the conductors C C, by squaring the ends of the tubes fitting the squared ends of the tubes of each row close together, and making tight joints between them, and inserting the whole united row directly between the two parallel sides or portions *g g* of the conductor, and securing each tube closely to the said sides or portions *g g*, substantially as described.

No. 14,244.—JAMES T. KING.—*Improvement in Steam Condensers*.—Patented February 12, 1856.

The object of this improvement is to save all the condensed water, and govern the steam pressure by the weight of water, without the noise occasioned by letting the steam into a tank below the surface of the water.

Claim.—A condensing tank having a vertical partition D, of any desirable depth, with the inlet steam-pipe and a vacuum valve upon one side of the partition D above the water, and the escape steam-pipe on the opposite side of said partition, so that the steam, before it can escape, must by its own pressure force the water down one side of the partition and pass up through the water on the other side, substantially as described.

No. 14,954.—WILLIAM B. GODFREY.—*Improved Engine Governor for Side-Wheel Ocean Steamers*.—Patented May 27, 1856.

When the paddle wheel B B has its paddles C submerged and is in motion, the resistance of the water to the revolution of the paddles of the governor-wheel overcomes the force of the springs G or G¹, and drives the governor-wheel paddles towards the propelling paddles on either side of them, whereby the lever I is acted upon to cause the rod *h* to move the slide *g*, and the arm *f* is caused to act through the rod *e*, elbow-lever *c*, and rod *b*, to open the throttle-valve. As soon as the propelling paddles cease to be submerged, the springs G or G¹ instantly throw the governor-wheel to the position to close the throttle-valve.

Claim.—The employment, in connexion with a propelling paddle wheel B B, of a second paddle wheel E E, heretofore termed the "governing wheel," fitted loosely to the same shaft and having applied to it springs G G to control its position relatively to the propelling wheel when the wheel is out of the water, or not in motion, and being connected with a lever *j*, or its equivalent, which works on a fulcrum *k*, secured to a propelling wheel, and which is connected with the throttle-valve I or cut-off in such a manner that when the propelling wheel is out of water, or not in motion, the governor-wheel will close the

throttle-valve or cut-off; but when it is in operation in the water, the resistance of the water to the paddles of the governor-wheel will cause the said wheel to move relatively to the paddle-wheel, and by that means give the throttle-valve or cut-off more or less opening.

No. 15,056.—WILLIAM BAXTER.—*Improved Hydro-Steam Engine*.—Patented June 10, 1856.

When steam is admitted to the steam-chest, it will pass down the passage G and D to the small cylinder C, and passing through the holes in the piston fitted thereto, will force down the valve *t* and force the water in the main cylinder B through the valve Q, causing it thereby to take a direction, as indicated by the arrows, through the turbine. The water passes then through the valve Q into the cylinder B¹, raising the float M¹ and closing the valve *t*¹, and then forcing up the small piston until its rod E¹ acts upon the sector F, to shift the valve by which the direction of the action of the engine is reversed.

Claim.—The method, substantially as described, of imparting rotary motion to a wheel or wheels by the pressure of steam, or other equivalent expanding gas, acting alternately on the opposite one of two columns of water or other liquid connected together, to cause the said water by such alternate action to pass through and impel the wheel or wheels.

No. 14,967.—WILLIAM W. H. MEAD.—*Improvement in Instantaneous Governors for Steam Engines, &c.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Combining the fly-governor with the throttle-valve C by fitting it loosely to the spindle D, and driving it by friction from a wheel F which is loose on the same spindle, and which derives its motion from the said spindle through a spring *e*; the said wheel F being connected in any convenient manner with the throttle-valve or cut-off, so that it may be caused by the retarding or advancing effect of the moment of inertia of the governor or fly, as the speed of the engine is suddenly increased or diminished, to diminish or increase the supply of steam to the engine.

No. 14,239.—BIRDSILL HOLLY.—*Improvement in Condensing Steam Engines which are used for Pumping*.—Patented February 12, 1856.

The steam engine A and pump B represented in the engravings are rotary. The nature of the improvement will be understood without further description.

Claim.—Leading the eduction steam pipe F of a steam engine A into the suction pipe C of a force or lift pump B, substantially as herein described, whereby the condensation of the steam is effected, and a partial vacuum produced without a separate condenser and air pump,

and this in engines employed wholly or in part to raise water without any additional expenditure or loss of power to raise the water to effect condensation.

No. 16,202.—JOHN UNDERWOOD.—*Improvement in the Cylinder and Piston of Hydraulic and Steam Engines.*—Patented December 9, 1856.

The India-rubber ring *b* is placed between the serrated piston B and serrated recess *c* of the steam cylinder A, serving as packing between piston and cylinder.

Claim.—The cylinder and piston, made as described, and for the purpose set forth.

No. 15,122.—CHARLES N. CLOW.—*Improvement in Differential Governor for Marine and other Engines.*—Patented June 17, 1856.

Power being applied, the pump A A will rotate, and the water be drawn from the box G by way of valve E, cylinder C, and branch induction pipe B¹, and returned through the eduction pipe I I and cock J to the box again; if now the motion of the pump is increased so much that the pipe I I will not carry the water off freely, it will cause piston L to rise, whereby valve E is closed and valve E¹ opened, permitting thus the water to flow through it into the cylinder C, and press against piston D, while a vacuum will be produced at that end of the cylinder connected to the pump by branch induction pipe B¹, and as a consequence, the piston D moves in the direction of the arrow, thereby closing the throttle-valve of the engine; the motion of the pump then subsides, and the reverse of this action takes place.

The inventor says: I do not wish to be understood as limiting my invention to marine engines entirely, as there are cases where it may be used to advantage in stationary ones.

I am aware that governors operated by pumps have been heretofore used, and that a piston moved similarly to piston L has been attached to the throttle-valve of the engine, and therefore I expressly disclaim such a construction.

But I *claim* controlling the throttle valve of the engine by means of pistons L and D and valves E E¹, by producing a vacuum on either side of piston D alternately, as the motion of the engine may require.

No. 14,124.—HUGH WIGHTMAN and WILLIAM HARDEN.—*Improvement in Oscillating Engines.*—Patented January 15, 1856.

The object of this improvement is to save steam and prevent leakage of steam, and also to avoid friction.

Claim.—The arrangement of the plumber-block I in correspondence with the steam openings in the hollow trunnion H of an oscillating steam engine, and the steam openings of a suitable valve J, so that the plumber-block lies contiguously between the trunnion and the valve, substantially as described and for the purpose represented.

No. 15,685.—WILLIAM A. CLARK.—*Improvement in Steam Engines.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of two or more pistons on the one piston-rod within the one cylinder, divided into compartments, the movement of each piston being limited to its respective compartment, and all the pistons travelling in the same direction, as set forth.

No. 15,181.—HENRY J. HAWKINS and THOMAS HAWKINS.—*Improvement in Adjustable Cut-Offs for Steam Engines.*—Patented June 24, 1856.

The nature of this invention will be understood from the claim and the engraving.

9 represents an end view of the rock-shaft, with bearing bracket removed; 18 the index rack; 6 the lower steam valve lifting-rod; 17 the rest block and carrier for self inserting toe.

Claim.—The adjustable cam 13 and self-inserting toe 15, which, when combined together on any rock-shaft motion for working steam valves, can cut off the steam at any given point on either motion of the piston at a moment's notice.

No. 15,650.—ANDREW HARTUPEE and JOHN MORROW, assignors to JOSEPH P. HAIGH, ANDREW HARTUPEE and JOHN MORROW.—*Improvement in Adjustable Cut-Offs for Steam Engines.*—Patented September 2, 1856.

When the stroke of the engine commences, the crank m turns the shaft n , and simultaneously with the lifting by the lifter g of the lever s and exhaust valve k ; the box t being turned on its centre on the shaft n (in the opposite direction from the lifter g) tilts up the extremity of the lifter h , on which rests the point of the lever r^1 of the adit valve i to admit the steam into the forward end of the cylinder. In this elevated position it would retain the lever r^1 , were it not that the slide w being drawn back in its way v by the action of the cam e^1 and cam rod c^1 before the stroke is terminated, the upper extremity of the stop z attached to the screw-shaft y comes in contact with the projecting extremity of the T-shaped lifter h , and draws it back in its box t , until the point on which the lever r^1 rested is drawn into the box t ; and no longer supporting the lever r^1 , the lever drops at once, cutting off the communication of the steam with the cylinder by closing the adit valve i . On the return stroke of the engine, the like process is repeated with the other adit valve i^1 . The closing of the adit valves can be regulated by adjusting the stops z z^1 on the screw y , which, being provided with right-and-left hand screw-threads will cause the stops to move in opposite directions when said screw is turned.

Claim.—The combination of the T-shaped lifter, slide, screw, and stops, or their equivalents, constructed and arranged as described, and operating as an adjustable cut-off for steam engines, in the manner set forth.

No. 16,132.—WILLIAM WRIGHT.—*Improvement in Adjustable Cut-Off for Steam Engines.*—Patented November 25, 1856.

The toe upon the valve is so placed that the back end of it is directly above the centre of hub *b*, so that when the rock-shaft *d* turns, so as to bring the end of one projecting boss *e*¹ behind the back end of the toe, the toe will fall; and upon the return motion of the rock-shaft, the projecting boss *e*¹ coming in contact with the back of the toe, the disk *e* will be pushed back, thus causing a projection of the boss upon the other disk *e*, by which means the corresponding toe will be lifted. The valves *o* are hinged to the cross-head *k* of the valve-stem *m* to relieve the valve from striking its seat with a shock when falling to cut off.

Claim.—The construction and arrangement of the adjustable cut-off, consisting of the cylindrical hubs, disks, and their adjustments, substantially as described. Also, the flap-valve checks, constructed and combined with the drop-valve as described.

No. 15,604.—JOHN T. DENNISTON.—*Improvement in Condensers for Steam Engines.*—Patented August 26, 1856.

The condensing water enters the condenser through a pipe *h*, chamber *b*, and valve *j*, at a time when that end of the steam cylinder with which it connects is taking steam, the piston of its pump *B* being then descending and keeping the valve *p* closed and the valves *k* and *j* open. When the action of the pump *B* is reversed—that is, when its up stroke commences before the eduction of the steam to its condenser takes place—the effect of this action is to close the valves *j* and *k* and open the valve *p*, thereby causing the water to flow from the condenser *C* to the pump *B*; and in consequence of the stroke of the pump changing before the eduction of the steam, sufficient water will have left the condenser when eduction commences to make room for the incoming steam, which opens the valve *Q* and rushes in between the water-cups *v* and passages *w*, and is all condensed by the time the engine piston has made a very small portion of its stroke.

Claim—1st. Forming a partial vacuum before the commencement of the eduction of the steam from the engine to the condenser, by first filling the condenser with water, and then partially withdrawing the water to form steam space, substantially as set forth.

2d. Suspending the water in the condenser in a number of cups or cells *v v*, with perforated bottoms, and passages *w w* between them, thus causing the steam to circulate among and over and under the water in the cups, and through the shower of water falling through the condenser.

No. 15,663.—DAVID MATTHEW.—*Improvement in Condensers for Steam Engines.*—Patented September 2, 1856.

The exhaust steam passes from the cylinder through pipe *X* into the receiver *C* and condenser *B*, and is condensed by the jets of water

discharged through the apertures of pipe *e*, at the same time that a blast of cold air is forced from a ventilator H into the condenser, and in between the flat tubes and the cross-tubes *g* in the condenser. As the air becomes heated, it passes back through the pipe S to assist the furnace, while the condensed water is collected in the receiver D.

Claim.—I claim the combination of the flat vertical tubes, connected by horizontal tubes with new rose pipes inside, and surrounded by the outer case, to condense by the combined action of air and water, substantially as described.

No. 14,486.—ORVILLE LEONARD, assignor to Himself and GEORGE H. REYNOLDS —*Improvement in Cut-Off Gear for Steam Engines.*—Patented March 18, 1856.

The rocker *d* vibrates with crank *c* around *f*, it being connected with the eccentric rod D by means of arm H and link I. Through the centre of the rocker passes a post *g*, which is connected with the governor K by lever L and rod *m*. The bar G has a slot which locks with the post *g*. If the governor balls fall, the post *g* is projected in proportion above the surface of the rocker and, in taking hold of G, raises the valve until the post is withdrawn by the motion of the rocker, when the valve will close by the weight E. If the balls rise still higher, the post is withdrawn beneath the surface of the rocker, and the valve is not raised.

Claim.—The rocker *d*, toe *g*, and bar G, constructed and arranged as described, and operating substantially as herein set forth.

No. 14,699.—JOHN S. SHAPTER.—*Improvement in Cut-Offs for Steam Engines.*—Patented April 15, 1856.

The lower steam valves being raised by the rock-shaft B, the plunger J attached to the bottom end of the lift-rod G raises the valve L and allows the fluid to fill the supporting chamber K. The dropping of the toe E from the lift *E*¹ leaves the lift-rod held up by the fluid; the turning of the rock-shaft drops down the connecting-rod U, and the thimble *i*² striking the adjustable nut O, and raising the discharge valve M, allows the fluid contained in the supporting chamber to be discharged back into the reservoir N, and the lift-rod G and the steam valves *i* *i*¹ to drop back into their seats. As soon as the thimble *i*² raises the discharge valve M its given height, the weight W is upheld by the nut P striking Q, and the link in the end of rod U slips on the pin in the arm T, until the motion of the rock-shaft is reversed, and the link catches the pin and raises the lever T, disengaging the thimble *i*² from its contact with nut O, and allowing the discharge valve M to return to its seat by its own weight and that of its attachments.

Claim.—Holding up the poppet steam valves of a steam engine by the fluid contained in a supporting chamber K, and adjusting the discharge of said fluid from said chamber for the purpose of dropping said steam valves, and cutting off the supply of steam to the cylinder at different points, as may be required.

No. 15,095.—MARSHALL WHEELER.—*Improvement in Governors for Steam Engines*.—Patented June 10, 1856.

The governing valve *b* is connected to the piston *d* in such a manner that the degree of pressure of the steam on the right-hand side of the valve *b* will, by its greater or less degree of pressure on the piston *d*, in connexion with the action of the counteracting spring *j*, so regulate the size of the governing valve *a* aperture as to admit an amount of steam to the engine exactly proportioned to the power which said engine is required to exert. The circuit-pipe *C* serves to facilitate the starting of the engine.

Claim.—The pressure piston *d* working in an offset chamber *B*, placed between the throttle and the engine cylinder, and combined with the throttle-valve *a*; said pressure piston being made to act against a spring *j*, which simultaneously closes it and the throttle-valve, and which yields in proportion to the resistance upon the engine piston, and opens the throttle-valve in a corresponding degree, substantially as herein set forth.

No. 14,545.—HENRY S. HOPKINS, assignor to Himself, BENJAMIN W. HENDRICK, and JOSEPH C. PECKHAM.—*Improvement in Means for Regulating Variable Cut-Offs for Steam Engines*.—Patented March 25, 1856.

This invention is an improvement on a mechanism for which a patent has been granted to G. H. Cooliss. During the fall of the balls of the governor, the inclined plane *S* will force down the vertical slide *C* (as shown in fig. 2) so as to throw the catch-rod *D* entirely out of action with the crank *E*. Thus the engine will stop in consequence of the steam being cut off from its cylinder. In order that the steam may not be entirely cut off, the shifting block *T* is interposed, which prevents the reversed inclined plane *S* from being driven over the vertical slide *C*.

Claim.—Combining the reversed inclined plane *S* with the main inclined plane of the regulator and valve mechanism above described, the same being to operate in manner and for the purpose substantially as hereinbefore specified. I also claim combining the movable stop-block *T*, or its mechanical equivalent, with the two inclined planes *B* and *S*, the same being for the purpose as set forth.

No. 14,204.—JUAN PATTISON.—*Improvement in Oscillating Steam Engines*.—Patented February 5, 1856.

The inventor says: The advantages gained by this improvement, besides the simplicity of the construction, consist in the mode of receiving the steam through the arched pipe surrounding the cylinder, instead of admitting it through the trunnions, by which means the friction is considerably reduced.

Claim.—The arrangement of parts, viz: The arched steam pipe *c c*,

saddle *e e*, hollow valve *h*, and chest *K*, substantially as described, for passage and distribution of steam in cylinders of oscillating steam engines.

No. 14,778.—JOHN B. ROOT.—*Improvement in Rotary Steam Engines.*—Patented April 29, 1856.

Upon the outside of the cylinder *a a a* is constructed another shelf *b b*, concentric with the first, and forming a chamber between the two, which chamber contains a partition so as to divide it into two equal passages extending the whole circumference of the engine. The steam is admitted under the rubber *i i*, through ports *o o*, in the inner cylinder. The roller *R*¹ being in advance of the opening below the stop-bar *p*, the steam is let into the chamber connected with this port; the steam, passing through this port under the rubber behind the roller *R*¹, carries it forward. The roller *R*¹ in passing the bar *p*¹ loses the steam pressure by the steam escaping out of the opening at the bottom of the chamber to which the roller has passed and into the passage communicating with the exhaust *W*; as soon as the roller *R*¹ passes the stop-bar *p*¹, it again takes the steam behind it from the steam port above the stop-bar. The other rollers take and lose the steam in the same manner. The engine is reversed by means of slide *r*.

One of each pair of arms *g g* being fixed to the stationary plates *f f*, and the other of the same pair being fixed to the movable disks *d d*, it follows, that, if the movable disks are turned on the shaft *D*, they will draw closer together, or separate the friction rollers *g*¹ *g*¹ of each pair, according to the direction in which the movable plates are turned; and hence, according as the friction rollers are nearer together or wider apart, will the piston rollers *R R R*¹ be carried close to the lining *i i*, or withdrawn from it towards the central shaft *D*.

Claim.—The contrivance of the steam ports, passages, and stop-bars, arranged in connexion with the piston rollers, so as to let the steam in upon the rubber at different and opposite sides of the cylinder at as many places as the number of rollers used shall require; thus acting upon the rollers from different and opposite points, thereby relieving the centre shaft from side pressure and friction, and also increasing the power of the engine with the increase of the number of steam ports and piston rollers.

I also claim the arrangement and device of the movable plates *d d*, and the stationary plates *f*, and collar, with the friction rollers *y*¹ and metallic bars or arms *g*, for the purpose of adjusting the piston rollers.

No. 15,281.—JAMES M. COLMAN and THOMAS TURTON.—*Improvement in Rotary Steam Engines.*—Patented July 8, 1856.

The steam, entering the induction chamber *I* and passage *J*, constantly issues from the openings *i i* into the cylinder, as shown by the arrows, and acts between one of the abutments and the face *e f* of the piston, thereby giving the piston a rotary motion in the direction of the

dotted arrow. The steam which has already acted and ceased to act upon the piston escapes through the passages *k* and *l* to the eduction chamber K, (fig. 2,) and, as indicated by the arrows, to pipe L. The abutments are severally caused by the cam, in regular rotation, to assume a position corresponding to that of B, as represented in fig. 1, as the prominent part of the piston passes them, to move into the cylinder, and the steam acts between each abutment and the piston in turn.

The spherical head Q (fig. 2) is secured to the shaft E, to be received in a spherical cavity made within the piston, thus forming a ball and socket connexion. The object of this is to enable the piston to adjust itself to the cylinder in case of the shaft wearing itself out of line.

Claim.—The engine composed of the rotary piston D, struck from three centres, as described, and the three oscillating abutments B B¹ B², with packing pieces at one end of their concave faces, arranged and operating in connexion with the piston in a cylinder A, in the manner substantially as herein described.

No. 15,667.—JOHN ROBINSON.—*Improvement in Rotary Steam Engines.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim the hollow shaft or piston-head D, with a passage or passages in its periphery, to admit or carry off the propelling gas or fluid; as such, but with a lateral arrangement of said passages in relation to the radial piston, and employing a separate transverse partition in the hollow head, to form inlet and outlet chambers at opposite ends of the piston, has before been used.

But I *claim* the arrangement of the piston G, projecting radially into, within, or through the hollow head D, and forming inlet and outlet cavities or passages *c*¹ *c*¹ and *b* *b*¹ on either side of it, across its whole breadth, or face, substantially as described, for the purposes set forth.

No. 15,641.—P. D. M. CARMICHAEL.—*Improvement in Rotary Steam Engines.*—Patented September 2, 1856.

The steam enters through pipe I to the chamber L, and acts upon the interior of the rim *d d*, to drive the piston around in the direction of the arrow, while the opposite chamber is open to the atmosphere through pipe J. The rim *d d*, moving in the direction of the arrow, will cross over the induction post I, which changes the action of the steam to the outside of the eccentric rim *d*, as represented in fig. 2, by forming the induction chamber L¹ and eduction chamber M¹ on opposite sides of the exterior of the rim *d d*, and at the same time provides for the escape of the steam that was in the chamber L, around the block D to the pipe J. Thus the steam will act upon the rim *d* during half of each revolution outside, and during the other half of each revolution inside the ring *d*.

Claim.—The rotary engine composed of a piston with an eccentric

rim *d d*, whose interior fits at one point to the outer of the cylinder, and its interior at a diametrically opposite point, to a central circular block *D*, said rim working within a slotted rocker *H* in an oscillating abutment *E*, the whole operating substantially as set forth.

No. 14,923.—JAMES M. MILLER.—*Improvement in Surface Condensers for Steam Engines*.—Patented May 20, 1856.

The steam passes into the trunks *a* of the condenser, through the induction pipe *a*³; but just before it reaches the condenser it enters a receptacle under an evaporator 2, from which a number of tubes project upwards. This evaporator 2 is filled with impure water. A pipe 2¹ leads from the evaporator into the steam pipe, so that the vapor from the water in 2 rushes into the condenser, and the evaporation goes on under a vacuum in the evaporator, produced by its connexion with the condenser; the whole supply, thus condensed, runs down into the coils *g* and passes through the pumps at *h*, where it is forced through pipe *k* up into the small reservoir *l*. Here the air, oil, and gases are occasionally blown off through pipe *l*¹. The water passes below into the upper chamber of case *c*.

The water in the upper section of case *c* is hot, while below the division plate *c*¹ the cold water enters through pipe *m* into chamber *f*, and thence through holes in the plate *e* into the space below *c*, whence it passes off through pipe *n*.

The inventor says: I do not wish it understood that I confine my claim to this precise form of tubes, in connexion with using the condensed steam in the main body of the apparatus above, as many various forms might be used. Nor do I confine myself to the precise quantity of cooling surface below, as it requires much less surface, in proportion, on a large scale than a small one. If vacuum is not required, it may be dispensed with entirely.

Claim.—Passing the water of condensation in or upon the main body of the condensing surfaces, on its way to the boiler, under the pressure of the steam, and the cold external water on the other portion of the surface.

No. 14,932.—NATHAN THOMPSON, jr.—*Improvement in Surface Condensers for Steam Engines*.—Patented May 20, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. An elastic junction of a tube *d* with a tube-sheet *b*, composed of a thimble *c* on a tube-sheet, and a short piece of elastic tubing *g* applied thereto, and to a tube end or a collar *f* on a set of tubes.

2d. I claim uniting firmly several small tubes into a collar, which latter is attached to a tube-sheet, by means of a slip, or elastic joint, whereby several tubes require only a single stuffing-box, or elastic junction, in order to compensate for their expansion and contraction.

And, lastly, I claim, in conjunction with an elastic junction, metallic clamping-rings *h h*, or their equivalent, applied substantially in the manner and for the purposes herein specified.

No. 15,745.—CHARLES H. REYNOLDS.—*Improvement in Variable Cut-Offs for Steam Engines*.—Patented September 16, 1856.

The governor G, by means of the centrifugal power of its regulating-balls, operates the levers *k* and *i*, turning on the fulcra *i*¹ and *k*¹, and thus raises or lowers the rod *h* and the plate C, which is provided with the bevelled edges *g*. The arms I rock on the rock-shaft D, and one arm raises one of the rods F which are attached to the cross-head E of the valve-stem, and raises the valve B, bringing the parts *e* opposite the parts *d*. As the stem is thus lifted, the arms F are forced apart by means of the studs *m* sliding on the bevelled edges *g*, until they escape the arms I, when the valve, being unsupported, falls down, causing the parts *e* to move below the parts *d*.

Claim.—The arrangement of the suspended lifting-rods F F, with their studs *m m* secured to the valve-rod or rods, and operated on by the arms I I of a rock-shaft, and the plate or plates C with bevelled edges *g g*, sliding on the said valve-rod or rods, said plate or plates being operated on by the governor, and operating on the lifting-rods, substantially as described.

No. 15,371.—WILLIAM DARKER, jr.—*Improvement in Vibratory Steam Engines*.—Patented July 22, 1856.

An oscillating piston A, turning on shaft *c*, is enclosed in a steam-box B; the length of the piston corresponds to the length of the chest, and its shape is represented at fig. 1. The steam-box B is separated by a partition into two chambers C and C¹, the upper part *e* of said partition being packed water-tight to the shaft of the cylinder, the lower part *g* being fastened in the bottom of the steam-chest and encircling said shaft. Steam is introduced into the steam-box through the pipes *i* and *i*¹ alternately to the chambers C and C¹, and acts thus upon the faces *a* and *a*¹; thus imparting to the cylinder an oscillating movement, which is converted into a continuous rotary motion of main-shaft G by cranks E and I and pitman F. The steam-box B is filled with water, as represented at fig. 1, to secure a steam-tight packing.

The inventor says: I do not claim the interposition of water between the steam and the working parts of the steam engine, but the oscillating piston A, of the form substantially as specified, arranged within a steam-box B, which is provided with a partition *e* and with suitable packing, all substantially as described, and with a suitable arrangement of a valve or valves and passages, the whole operating as set forth, in connexion with suitable means of converting the oscillating movement of the piston into a continuous rotary motion.

No. 14,082.—WILLIAM H. BROWN.—*Variable Dial for Dividing Engines*.—Patented January 15, 1856.

The nature of this improvement consists in causing both the index E and dial D to rotate at the same time, either in the same or contrary directions, with such relative velocity that at the completion of a revolution of the main shaft S one point of division in the dial shall occupy the position which one of the others had at the beginning, or shall resume its own position, having made one or more revolutions in the mean time, thereby causing a difference in the number of divisions made in a circle rotating with the main shaft from what would have been made had the dial been stationary, equal to the number of such points of division in the dial that pass a fixed point during the revolution of the main shaft—less or more, according as the dial turns in a direction with or contrary to the index. For this purpose is made use of the toothed wheel H fixed on the main shaft; the adjustable stud I for intermediates of various diameters, which are used for transmitting motion to the dial plate in such proportion as may be desired, teeth being cut in its outer edge for this purpose; the stud K for a second intermediate, when required to give the dial a contrary motion.

The inventor says: I do not claim the use of gearing as a means of transmitting or varying rotary motion

But what I *claim* as my invention, and which I desire to secure by letters patent, is causing both the index and dial to rotate at the same time, by means substantially the same and for the purpose set forth in the foregoing specification.

No. 14,891.—JOHN VAN AMRINGE.—*Fire and Escape Ladder*.—Patented May 13, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—The combination of the ladder 2, frame 7, and guy chains 2 3, as attached to the frame-work 17 17, and these in combination with the pulley 3 and rope 24, or their equivalents, for elevating the ladder and frame.

I also claim the arrangement of the guiding shafts 21, arranged with the two sections of the framing 17 and the windlass 1, and the cord connected therewith and to one of said sections 17, for drawing the two sections apart and together.

No. 15,539.—CHARLES W. WILLARD and JOHN P. WILLARD.—*Improvement in Valve-Gear for Steam-Hammers*.—Patented August 12, 1856.

During the reciprocating movement of the trip-hammer, the actuator L, turning on a pin M which projects from a hanger N which turns on a pin projecting from the shank of the trip-hammer, will be raised and depressed and alternately brought in contact with the adjacent in-

clined faces of the cams O P, which are adjustable by means of the screws R and Q, and by said cams will be forced against the bent lever I so as to impart to it a reciprocating movement such as will operate the valve in the valve-chest G. The extent of such movement will be increased as the cams are caused to approach one another, and decreased as their distance from one another is increased.

Claim.—The combination of the bent rocker-lever I, the actuator L, and the two adjustable cams O P, the whole being applied together and to the valve-rod and trip-hammers, substantially as described.

No. 16,071.—JOHN R. SEAS.—*Arrangement of Means for Heating Feed-Water of Locomotive Engines.*—Patented November 11, 1856.

The feed-water passes from pipe D into pipe F, and enters the outer coiled pipe G at the bottom of the cylinder coil; it then passes up said cylinder and descends through pipe J to the bottom of the inner cylinder coil I, whence it passes through pipe H into boiler B. As the water passes through the pipes G and I it becomes heated by the steam escaping through the exhaust-pipes K and K¹, the orifices of which are placed under the coils G and I, and also directly under the neck N of the smoke-stack.

The inventor says: I do not claim heating the feed-water of a steam boiler in its passage from the feed-pump to the boiler; nor heating it by the waste or escape heat from the boiler; nor placing the heating pipes in the smoke-box of the boiler—as they are known and used: neither do I claim the use of the circulating pipe and double-acting check-valve; nor placing the heating pipes and their connexions below the water line of the boiler, as secured to me by letters patent, dated August 5, 1856.

But I *claim* the construction of the duplicate cylindrical coils G and I, and their arrangement in relation to the smoke-box A, the exhaust-pipes K K, the tubes C, and the base N of the smoke-stack of a locomotive boiler, as and for the purposes set forth.

No. 15,820.—JOHN ROBINSON.—*Improvement in Locomotives for Roads, &c.*—Patented September 30, 1856.

The first part of this invention relates to the arrangement of a spring-bolt *u*, which serves the purpose of locking the toothed sector Q when the locomotive is intended to run in a straight direction. If it is desired to alter the course of the locomotive, then a longitudinal motion is imparted to the shaft R, by means of the lever *n* bringing the pinion *m* in gear with the pinions *o*, at the same time that the collar *t* in the groove *u* withdraws the bolt *q* from the sector Q; by turning the shaft R, the bevel wheel *l* operates the sector Q, which is attached to the forward truck, and thus changes the course of the locomotive. The second part of this invention will be understood by reference to the claim and engraving.

Claim.—1st. Combining the sliding bolt *q*, by which the sector on the fore truck is locked, with the rotating shaft *R*, which carries the gear which operates upon the sector to turn the fore truck, by means of a loose collar *t* and groove *u*, or in an equivalent manner, whereby the bolt may be operated by a longitudinal movement of the said shaft, as fully described.

2d. Fitting the sprocket wheel *P* to the shaft *K*, which drives the fore wheels, with a universal joint, to enable it to adapt itself to the direction of the driving chain when the said shaft *K* is not parallel with the engine shaft, and thus to prevent the chain slipping off the wheel, or being twisted or broken, substantially as described.

No. 16,220.—SAMUEL CARSON, assignor to THE AMERICAN RAILWAY MANUFACTURING COMPANY.—*Method of Charging the Receiver of a Locomotive with Compressed Air from fixed Stations.*—Patented December 9, 1856.

As the locomotive *b* moves along the track *a*, the pipe *d* of the receiver enters the bell-mouth *t* of the charging cylinder *n*, and forms an air-tight joint with the same by means of the elastic mouth-piece *h*¹. The carriage of the charging cylinder gradually curves off on the tracks *j*, the compressed air passing constantly from the charging pipe *x* to the receiving pipe *d*. When the carriage of the charging cylinder stands at right angles to the main track, then the pipe *d* begins to move out of cylinder *n*, and the valves *v* and *g* are closed by their respective springs, and the locomotive is charged.

The inventor says: I do not limit my claim to the special construction and arrangement of the parts, as these may be greatly varied.

I do not claim the propelling of locomotives on railroads by the elastic force of compressed air or other permanently elastic gas, nor to the charging of compressed air or gas into the receiver of a locomotive at given stations along the line of a railroad, when this is done by stopping the locomotive, to connect the receiver with the supplying apparatus, as these have long been suggested and described.

I claim the method, substantially as described, of charging the receiver of a locomotive with compressed air or other permanently elastic gas, from fixed stations, whilst the locomotive is in motion and passing the station, by means of the self-adapting apparatus, substantially as described, or equivalent thereto.

No. 14,187.—PETER S. EBBERT.—*Improvement in Heating Feed-Water Apparatus for Locomotives.*—Patented February 5, 1856.

1 is the pipe forming a connexion with the pump 2 and the heater at 3; 4 the discharge pipe from the heater, the connexion being at 5 and passing into the boiler through check-valve 6; 7 is the branch of pipe 4 having a junction at 9 and also a connexion with the top of the check-valve 6, or any part of the boiler which may be used as a return sup

ply-pipe for the purpose of keeping the heater full if at any time required.

Claim.—The auxiliary pipe 7, as arranged in relation to that part of the main pipe containing a valve, so that a communication may exist between the water space of the boiler and the interior of the feed-water pipes in the smoke-stacks when the feed-pump is not in operation, as herein set forth.

No. 15,225.—PETER S. EBBERT.—*Improvement in the Base-Piece of Locomotive Smoke-Stacks.*—Patented July 1, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The construction of saddles or base-pieces A for the stacks or chimneys of locomotives in which the feed-water for the boilers is heated, the trough or receiver e, for catching the water or condensed steam that drips from the pipes F, and the waste-pipe G for conveying it away, substantially as shown.

No. 14,081.—JOHN BEATTIE.—*Improvement in Means for Supporting the Propeller Shaft and Receiving the Rudder of Stern Propellers.*—Patented January 15, 1856. Patented September 5, 1850, England.

The nature of this invention will be understood by reference to the engraving.

Claim.—The construction of an open wrought-iron stern frame E E E, forming part with the keel H of the vessel, and receiving the rudder, substantially as above described.

No. 15,246.—W. K. MILLER.—*Improvement in Steam-Gauges.*—Patented July 1, 1856.

The plaster is not allowed to surround the short limb of the mercury tube C from a to a^1 , as this space is left open for the index plate, and filled with alcohol for the purpose of preventing refraction and oxydation of the index plate by moisture from condensed steam. The steam is conveyed to the mercury tube through the pipe K and holes L.

Claim.—The arrangement of the syphon tube within the cement-holding tube or case G, and both within the metal case with transparent front, and thereby forming a cement and transparent liquid chamber within the case, in the manner substantially as described for the purpose set forth.

No. 15,058.—SAMUEL W. BROWN.—*Improvement in Steam Pressure Gauges.*—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The combination of the rigid radial arms P P with the flexible and elastic disk or surface R, for covering the joints of these radial arms steam-tight, when yielding or moving by the force of steam or water to correctly indicate the pressure thereof, the radial arms P P being fitted so as to operate so close to each other as to prevent the surface R from bagging, essentially in the manner and for the purposes fully set forth.

No. 15,259.—WILLIAM MONT. STORM.—*Improvement in Steam Pressure Indicators and Regulators.*—Patented July 1, 1856.

The regulator being located in the plane of the desired water level of the boiler, if the water in the latter falls, steam fills the tube A, heating, expanding, and buckling it, and moving the arm E by means of the spiral grooves. When the water rises on F¹, working in a sleeve G, as shown, water will fill the tube A, displacing the steam and cooling, contracting, and straightening the tube, rotating the arm in the opposite direction. One end of A passing through a hole in the corresponding end of the casting B is plugged steam-tight with the plug C, against which presses the key plug D, so as to give the tube A so much buckle at the ordinary temperature, that if the apparatus was reduced far below zero it would not bring the tube more than straight, or injure the instrument were it left improperly exposed, filled with water, and frozen up.

The inventor says: I have no claim to the use of a tube which, admitting the steam within, saves the steam case and stuffing-box, nor any claim to the double communication (hot or cold) with any form of thermostat; nor do I lay any claim to the expedient of the buckling motion, whether of tube or bar, separately considered.

But I *claim* the combination of a simple steam-tight metal tube A with a fixed and open (not steam-tight) frame or support B, in which both of its extremities are held stationary, while the motion of its middle, left free, is communicated to its work in such manner, or by a device combined with the instrument, as to multiply its range of action; the communication of the tube with the steam of the boiler being separate and distinct, moreover, from that to the water space of the boiler, and filled with a cold fluid, and so arranged as not to allow any circulation through it of the heated water from the boiler—the instrument, as a whole, being substantially as described and shown.

I also claim in combination with the tube the “key nut,” or its equivalent, for the purpose explained.

No. 15,229.—WILLIAM S. GALE.—*Improvement in Steam-Pressure Regulators.*—Patented July 1, 1856.

The groove F in the bottom of piston B fills with air when the pressure is applied, thereby preventing any leak of steam; G is a gasket clamped between the base E and the cylinder A, overhanging the

groove F made of rubber, to conform itself to the piston B as it moves up and down.

Claim.—The arrangement of the groove F in the piston B, in connexion with the gasket G.

No. 14,500.—STEPHEN J. GOLD.—*Improvement in Steam Radiator Cocks.*—Patented March 25, 1856.

The space between the disk *f* and the cavity of the cock will admit of the discharge of air from the radiator while the steam enters. When the radiator is full, the steam between the disk *f* and cap C will at once be condensed and close the passage, thus causing the pressure behind the disk to keep it close to the cap.

Claim.—The automatic closing of the cock on the filling of the radiator with steam, by means of a loose disk in the head of the cock, acted upon substantially as set forth.

No. 14,944.—WM. BALL.—*Improvement in Operating Steam Stamps.*—Patented May 27, 1856.

The interior diameter of the cylinder D is enlarged at *a*, so that on the piston arriving at a certain point, a free passage is afforded all around it for the steam, and the operation of the stamp is instantly stopped.

Claim.—Stopping the operation of the stamps whenever the piston is allowed to descend to a certain point, by the neglect to feed the material to the mortar in time.

No. 15,815.—JOHN PERCY.—*Improved Steam Wagon.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The two trucks C C attached to the under side of the frame A, connected by the perch G, and turned by means of the rods *i*¹, which are fitted in the inner ends of the frames *b* of said trucks and connected to the rack H, or an equivalent device.

2d. Connecting the axles *d* of the wheels D with the connecting rods *e*¹ of the steam cylinders by means of the gearing *e g* and crank *h*, substantially as described.

3d. The arrangement of the trucks C, frame A, steam cylinders E, boilers F, and the device for turning and guiding the trucks, as herein shown and described for the purpose set forth.

No. 14,562.—JAMES HARRISON.—*Improvement in Automatic Steam Whistles in Locomotives.*—Patented April 1, 1856.

The object of this invention is to cause the whistle automatically to sound at fixed points, with all the requisite modifications of tone or

sound both as regards degree and duration. The shaft c of the cylinder A , with the spiral grooves a , is intended to be geared with one of the truck-wheels of the locomotive in such a manner that the periphery will rotate not less than about six inches for every mile. The pin e of lever D moves in the grooves a , striking from time to time one of the lifters f f^1 f^2 f^3 , whereby the other end of the said lever is depressed, causing the whistle to remain open, in proportion to the length of the respective lifter, and to sound.

Claim.—The within described apparatus, consisting of the spirally slotted or grooved cylinder A , for connexion with and operation by the locomotive, detachable and adjustable lifters (f f^1 f^2 f^3) of varying thickness, length, or breadth, and lever D , or its equivalent, in combination with and for operation on the whistle E , as and for the purposes set forth.

No. 14,709.—ALEXANDER BUCHANAN.—*Improvement in Balance and Slide Valve for Steam Engines.*—Patented April 22, 1856.

The steam entering through c^1 flows on and enters the channel f^1 ; from this it passes into the parts a or a^1 , according to the position of the valve, the exhaust through b being as usual. Steam will also flow through the pipe i into m ; here it escapes by raising the valve l^1 , and thence passes into the steam case h through i ; but unless means were taken to prevent it, the pressure in h would soon be equal to that in f , and of course, as the outer surface of the valve exposed to the pressure of the steam is much greater than that on the under side, it would be forced down upon its seat. This is prevented by shutting off the flow of steam through i^1 so soon as enough has entered h to accomplish the object; and this is effected by means of the piston k^1 , (figure 4,) where a branch pipe m^1 leads a portion of the steam off from i^1 into the cylinder k , and, acting on the piston k^1 , forces down the valve l^1 and stops the further influx of the steam through i ; the areas of the piston k^1 and valve l^1 being to each other as the respective areas of the outside of the valve f and of the channel f^1 .

Claim.—The means of maintaining the differential pressures on the two sides of the valve necessary for balancing the same; that is to say, the combination of an apparatus, substantially as described, with the valve, as set forth.

No. 15,208.—WILLIAM WRIGHT.—*Improvement in Cut-Off Valve-Checks for Steam Engines.*—Patented June 24, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The arrangement for retarding the descent of the valve, namely: The combination of the bell crank q r with the valve-rod A on the one part, and the dash-pot o or equivalent resisting apparatus on the other, so coupled and operating that the arm s of the crank r r to which the valve is attached shall be approaching its centre when

descending, while the other arm q connected with the piston in the dash-pot shall be approaching its greatest throw, thereby checking the rate of descent of the valve by a force compounded of the diminished speed and diminished pressure.

No. 14,978.—HERMAN WINTER.—*Improved Valve Gear for Steam Engines*.—Patented May 27, 1856.

The crank f^4 has an elongated slot f^3 for the reception of the pin on the rotating lever f^2 , and thus accommodates itself to the irregular curve described by the end of the rotating lever f^2 .

The rods g^3 and g^4 are vibrated in the plane of their reciprocation by means of the system of links j , bell cranks h^2 , and radius bars g^7 g^8 , and the rollers g^5 attached thereto describe an irregular oval. As the rods g^3 g^4 reciprocate upwards, they raise the loose toes h^2 , which lift the foot-stalks l l . But as the valves rise, the friction pulleys are drawn over, as before explained, until they reach the concavities m m m , whose inclined faces then commence to slide down over the rollers, thus lowering the toes and valves, while the rollers vibrate in the direction of arrow x . This lowering may take place even while the roller is rising, and a cut-off at less than half-stroke can consequently be effected.

Claim.—1st. An eccentric f on the main shaft d , a lever f^2 properly governed and connected therewith, and a crank f^4 upon a secondary shaft g ; the whole in combination and connected each to each substantially in the manner and for the purposes herein set forth.

2d. An eccentric, or its equivalent, upon the revolving shaft, in combination with a rod or lever connected therewith, receiving a reciprocating motion from the eccentric, and a vibrating motion, whereby valves of steam engines may be raised and lowered, substantially as herein described.

3d. Forcing rods or levers, caused to reciprocate as specified, to vibrate in the plane of their reciprocation by a positive motion, derived from some convenient part of the engine, through the intervention of bell cranks, radius bars, and links, or their equivalents, connected and acting substantially as set forth.

4th. Changing the centre of vibration of reciprocating vibrating levers, or altering the distance through which they vibrate, as described, in combination with a toe or foot curved, whereby the period of cut-off may be varied as herein specified.

And, lastly. Altering the position of the pivots of a bell crank provided with a link and radius bar, whereby the period of cut-off may be varied at the pleasure of the attendant.

No. 16,171.—ALFRED S. BEEBE.—*Improvement in Valve Gear for Steam Engines*.—Patented December 9, 1856.

Before the main toe D commences to rise, the secondary toe I is within the recess of the main toe, as represented in the dotted position. As the main toe D rises, its upper face acts upon the under face of

lifter E and operates the valve, but at the same time comes in contact with lifter E, depresses the short end, and raises the long end; the spring bolt *e* falling into catch-piece *d* and holding up the secondary toe I, which holds up lifter E until its point *s* passes the rounded edge *n**, when the lifter is gently lowered to close the valve by the point *s* working up the face *n n**. The spring bolt *e* is now liberated from the catch *d* in passing the edge *n**, and the secondary toe is drawn into the recess of the main toe before lifting the valve again. By adjusting the sliding-piece G, the lifter E can be caused to be held up a longer or shorter time, for admitting a greater or smaller portion of steam to the cylinder.

Claim.—I claim the secondary toe I, applied to the main toe D, and operating substantially as described, in connexion with a sliding piece G, or its equivalent, fitted to the lifter E, for the purpose set forth.

No. 14,580.—WILLIAM STEPHENS.—*Improvement in Valve Gear of Oscillating Engines.*—Patented April 1, 1856.

The slot *g* is made in a circular plate G, which is capable of turning in a circular frame H, which is rigidly attached to the slide *h*; the plate G is secured to the frame H by means of a set-screw *n*; by turning or adjusting the plate G by means of a handle H', so as to bring the ends of the slot *g* nearer in line with the slot *h*, the lead is diminished; and by turning it so as to bring the ends more out of line with the said slide, the lead is increased.

Claim.—The within described arrangement of the slotted plate G in the slide *h*, or its equivalent, for the purpose of adjusting and varying the lead of the valve, as set forth.

No. 14,620.—H. H. SMITH.—*Improved Governor Valve for Steam Engines.*—Patented April 8, 1856.

The nature of this improvement consists in furnishing the stem 4 of the valve with two rings 8 8, which are fitted to eccentrics 5 and 6, and made to slip on said eccentrics so as to adjust themselves to the seat of the valve by the steam pressing against the outside edges of the ring, thereby keeping them up against the valve seat at all times and forming a steam joint, without being subject to so much friction as to affect the action of the governor upon the valve for regulating the proper quantity of steam admitted to the engine.

Claim.—The self-adjusting rings 8, combined with the eccentrics 5 and 6, or their equivalent, operating substantially as and for the purposes set forth in the foregoing specification.

No. 14,516.—HORATIO O. PERRY.—*Improved Valve-Motion for Oscillating Engines.*—Patented March 25, 1856.

V is the vibrating valve, S the valve-shaft, O the steam-chest, and P the cylinder. The valve-shaft S is provided with the two arms X

and A. By elevating the lever E, the rollers F F are lifted, and both the eccentric rods are raised until Y hooks into the arm X and gives a backward motion to the engine. By depressing E, both rods are depressed until B hooks into A, whereby the motion is reversed. The arm H is fixed on the cylinder for the purpose of supporting the valve-shaft S.

Claim.—I do not claim the invention of rotating or partially rotating valves loosely connected to shafts in the steam-chest; nor do I claim the opening and closing of parts by the oscillating motion of the cylinder; nor do I claim, broadly, the working of valves partly by the motion of the cylinder, and partly by the aid of eccentrics, irrespective of the peculiar form and arrangement described. What I *claim* is, the valve-motion above described, as arranged, in relation to and in connexion with the loosely attached hollow-throated and partially rotating valve, substantially as described and for the purpose herein set forth.

NO. 15,576.—EDWARD S. RENWICK.—*Improvement in Valve-Motions for Steam Engines.*—Patented August 19, 1856.

The lifting rods D D¹ and F F¹ have feet secured to them which project over suitable toes G G¹ and H H¹, by means of which the feet-rods and valves are lifted and lowered. By rocking the shaft I the exhaust valves are alternately raised and lowered; the steam-toes G and G¹ are secured to the rock-shafts J and J¹, which are supported at their ends by the yokes K, which latter is secured to a cam on shaft M that rocks upon the exhaust rock-shaft I. The steam and exhaust rock-shafts are provided with arms d d¹ d², which are connected by link L, which is pivoted to all three arms; by this link L and the arms, the rock-shafts J and J¹ are caused to rock simultaneously with the rock-shaft I. The shafts I and M are rocked by a cam N working in a spring-cam box, such as is shown at U, in which the friction-wheels are constantly held in contact with the rim of the cam N by the action of a spring V.

Claim.—The combination of the parts of a valve-motion, substantially in the manner described, so that the steam-valves shall be opened by mechanism at intervals coincident or thereabouts with the opening of the exhaust-valves, and that the steam-valves shall be closed by mechanism that is independent of the exhaust-valves, but which governs and controls the toes by which the steam-valves are opened in such manner that the closing of the steam-valves does not change the angular position in which these toes have been placed to open the valves.

2d. The combination of the steam-toes G G¹, rock-shafts J J¹, arms D D¹ D², and link L, with the exhaust rock-shaft I, for opening the steam-valves.

3d. Also the combination of a cam and spring-cam box, with mechanism for imparting the movement of the cam-box to the valves.

4th. The combination of the yokes K K and shaft M, with appropriate operating mechanism, depending on the movements of the crank-shaft of the engine for holding the steam-toes in the proper position to

open the valves and for lowering the same bodily to close the steam-valves.

5th. Closing steam-valves that have been opened by moving the steam-toes, or their equivalents, bodily, without changing their angular position, the distance required to shut the valves.

No. 16,227.—JOHN BUTLER.—*Improvement in Valve-Motions for Steam Engines*.—Patented December 16, 1856.

As the main shaft *S* is rotated, the eccentric *G*, rock-shaft *E*, rocker *g*, and stud *g*¹, operate on the yoke *b*, to move the valve *C* in either direction to open one of the ports to admit steam to one side of the piston; and the other eccentric *H*, rock-shaft *F*, rocker *h*, and stud *h*¹, operate on it to move the valve back again only far enough to cut off the steam, leaving the movement which is necessary to open the other part to admit steam on the other side of the piston to be completed by the eccentric *G*, rock-shaft *E*, rocker *g*, and stud *g*¹.

The inventor says: I do not claim the use of two eccentrics to give the valve two distinct movements to admit and cut off the steam.

But I *claim* the arrangement of the two rock-shafts *E F*, with their rockers operating upon a yoke *b*, or its equivalent, attached to the valve-stem, said rock-shafts deriving motion from separate eccentrics, and the whole operating substantially as described.

No. 14,225.—CHARLES W. COPELAND.—*Improvement in Valves and Exhaust Passages of Steam Engines*.—Patented February 12, 1856.

The object of this improvement is to secure a larger passage for exhaust than for steam, without complicating the valve gear; and the improvement consists in so constructing the valve and seat that the former shall, in its operation, open two or more passages for the exhaust, instead of one, as is the case with the valves commonly used. For instance, when the valve occupies the position shown by dotted lines, steam is entering the left end of the cylinder at *r* by the end passage, while the centre passage is closed by the bar; while at the other end of the cylinder all three passages are open into the cup and exhaust passage.

Claim.—The herein described manner of increasing the area of the passages for escaped steam by means of bars, or their equivalents, making part of the valve, acting in conjunction with additional apertures or ports in the seat, substantially in the way and for the purpose herein set forth.

No. 15,207.—WILLIAM WRIGHT.—*Improvement in Operating Cut-Off Valves for Steam Engines*.—Patented June 24, 1856.

a a represents the yokes to which the lift rods *A* and *A*¹ are attached. The toe *b* is keyed to the rock-shaft *b*¹. Through the slot *c*¹

of the supplemental toe c passes a pin d , whereby it is kept fastened to the yoke. The curved slotted piece e (the centre of said curve being at b^1) is fastened to c , and passes through a split formed in the end of the toe b . f is a latch secured to the end of a sliding-bar g , which plays in bearings across the head of the yoke. As the yoke rises vertically, the pin e^1 describes the arc $e^1 e^3$, consequently the piece e is compelled to move with the pin, and causes the toe c to move also in the same direction from x to e^3 , and the point of c will therefore be drawn from underneath the latch f , at which moment the valve will drop, since it requires the engagement of both ends of c to support it upon the toe b ; b now descends, causing c to follow and engage again under the latch, the spring upon the back yielding to allow the end of the supplemental toe to pass, and the lifting will be again performed as before.

Claim.—So combining the lifting toe with the lift rod, by means of a supplemental toe or slide bolt, that the arc or curve described by the vibration of the lifting toe shall effect a lateral movement of the bolt, thereby tripping the valve, as described.

No. 14,649.—HENRY E. CANFIELD.—*Improved Arrangement of Means for Operating Cut-Off Valves of Steam Engines*.—Patented April 15, 1856.

As the slotted arm c (the said arm being connected with the main valve rock-shaft B of an oscillating engine) departs from a line parallel with the slide D, it will affect the operation of the governor, if not entirely overcome its power. To prevent this, the spring-cramps G G are used in the following manner: When the slotted arm C departs from a perpendicular position, it is brought in contact with one or the other of the springs G G, thereby causing the inner face of the head h to be pressed against the slide D, so as to prevent any movement of the said slide until the spring part is released from pressure, when it will be thrown back to its place by the small spring J, thus allowing the slide to assume such position as may be indicated by the governor, and at a time when the latter can act to the best advantage.

Claim.—The spring cramps G G, as arranged in relation to the sliding-bar D of the governor, for the purpose and substantially in the manner shown and described.

No. 15,400.—HENRY R. WORTHINGTON.—*Improvement for Relieving Steam Slide-Valves from Pressure*.—Patented July 22, 1856.

A represents the slide-valve of a steam cylinder; it is provided in its middle with a passage c communicating with the exhaust opening B and a small cylinder b . The piston H is properly fitted in the cylinder b and attached by a swinging link G to the steam-chest cover at S, thus allowing the piston H to move easily back and forth in accordance with the motion of the steam-valve. The pressure thus made

upon the area of the piston H is so much taken from the back of the steam-valve A, and transferred, by means of the swinging-bar G, to the point of support S.

Claim.—I claim transferring steam pressure from the back of a steam slide-valve to a fixed point, by means of a piston and vibrating link, substantially as described and for the purposes set forth.

No. 14,749.—HENRY R. WORTHINGTON.—*Improvement in Completing the Throw of the Valves of Direct-Acting Engines by the Exhaust Steam.*—Patented April 22, 1856.

The engraving represents the steam admitted through the central opening C on the point of passing into the right-hand end of the cylinder, while the exhaust fills the space D. The steam acting on the piston A uncovers the openings a^1 and b^1 , which latter communicates with the escape-pipe or condenser. Thus, the necessary motion of the steam-valve is produced by the effort of the steam to escape from the small cylinder B. A similar operation takes place at the end of the return stroke.

Claim.—Completing the throw of steam-valves of direct-acting engines by the steam already within the cylinder on its way to the open air or to a condenser.

No. 14,338.—JACOB SCHEITLIN, assignor to Himself and OLIVER A. DAILEY.—*Improved Arrangement of Means for Operating the Valves of Steam Engines.*—Patented February 26, 1856.

The surface of the cylinder B is provided with two rectilinear teeth a a and two screw-thread teeth b b . The indentations a^1 a^1 of the cross C are adapted to the teeth a a , and the indentations b^1 b^1 to the teeth b b . The cross being free to slide on its shaft H, by means of a feather f , receives from the cylinder and transmits to the crank C^1 (to which latter the valve-rod E is connected) a motion corresponding to the relative position of the cross and cylinder.

Claim.—The four-teeth cylinder B, keyed on the main driving or crank-shaft A, the Maltese cross C, with its shaft H, and the small crank C^1 keyed thereto; said cross, by means of the feather f , or any equivalent device, being susceptible of a free and steady to-and-fro motion along whilst driving its shaft H, and being so moved by the rack and pinion D, a screw, or other equivalent means, by which also it can be retained on its shaft H in any desired position in relation to the cylinder; the whole being arranged, connected, and operated substantially as herein set forth, whereby a single steam-valve of a steam-engine can be worked either as a feed-valve, or as a feed and as a cut-off valve alternately, and the steam cut off at any required point of the stroke whilst the cylinder is in operation.

No. 14,419.—ROBERT L. STEVENS.—*Improvement in Means for Reducing the Friction of Slide-Valves of Steam Engines.*—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The box or balance-block B, constructed substantially as above described, in combination with an ordinary slide-valve, altered as above described, said balance-block having around the edges of its upper face ledges L L, which project upward, and are made to fit around the whole upper face into a recess, such as is above described, in the follower D, and formed by double edges projecting downward from D and enclosing L, which recess has an India-rubber packing in its bottom, against which the said ledges L are made to pack steam-tight, together with another India-rubber joint at the bottom of another similar recess, formed by the ledges L L and a part of the bonnet C, into which latter recess one of the ledges of the follower D fits tight in the same manner as the ledges L fit in the recess.

No. 15,025.—OTIS TUFTS.—*Improvements in Operating Valves of Steam Engines.*—Patented June 3, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. The oscillating plate *a*, with its attachments, carrying the adjustable cut-off cams *d*, acting with their sliding-rolls *o*, for cutting off the steam variably.

2d. The self-adjusting arrester J and its parts acting on the closing edge of the adjustable cut-off cam, for easing the motion of the cut-off valve and its gear.

3d. The adjusted arrangement in combination in the cut-off and exhaust-cams *d* and 3, to work the cut-off and exhaust-valves united.

4th. The double arm *s*, with its sliding and other roll, acting alternately on the cut-off and exhaust cams.

5th. The gear-joint connexion between the regulator-shaft 24 and the adjusting-screw 8 for working them together, while one is fixed and the other oscillates.

6th. The sliding-carrier 12, with its attachments and friction-held nut 13, for adjusting the variable cut-off cams on the oscillating plate by the regulator.

7th. The arrangement of the adjustable coil-springs 2, in combination with their shaft 30 and lever 1, for forcing the rolls to the cams

No. 14,605.—WILLIAM S. GALE.—*Improvement in Piston Valves or Steam-Boiler Regulators.*—Patented April 8, 1856.

As the piston B rises, the packing *b* is forced inwards, and the contraction of the spring *d* increases its force, thus producing a gradual closing of the damper. In order to prevent the packing from being

forced out by the steam, a portion of the packing *b* is placed between the spring *d* and the lip *e* of the piston-cap F.

Claim.—The lip *e* of the piston-cap F and the spring *d*, arranged in relation to each other and to the piston body, for the purpose of clamping the packing *b*.

No. 15,834.—HENRY F. SHAW, assignor to Himself and GEORGE F. SHAW.—*Improvement in Regulating Valves for Steam Engines.*—Patented September 30, 1856.

By reference to the engraving it will be seen that as the velocity of the regulating balls increases, the gates *m* will be raised and the steam way through the ports *c* of the valve D will be diminished; and as the velocity of the balls decreases, the gates *m* will descend and an increased amount of steam will be admitted.

Claim.—The regulating gates *m*, as connected with the valve D and the governor, for the purpose set forth.

No. 15,120.—ROBERT CORNELIUS.—*Improvement in Safety-Valves.*—Patented June 17, 1856.

As soon as the steam raises the valve A in the slightest degree, immediately the equilibrium of the weight W is destroyed, and the weight W falls forward, and raises up D and A to its highest point, thus instantly affording a large and free issue of escape for the steam until the engineer restores the weight to its former upright position.

Claim.—The arrangement of the weight and lever of an ordinary safety-valve, so that as soon as the steam reaches its limit of pressure the weight shall so change its position as to open and keep open the aperture of discharge of steam, in the manner and for the purpose substantially as herein before described.

No. 14,963.—ALEXANDER B. LATTA.—*Improvement in Safety-Valves for Steam Engines.*—Patented May 27, 1856.

The safety-valve lever E operates upon the spring balance D by means of the quadrant A B, which turns on a pin C; as the crank A approaches a perpendicular position, the power required to hold it must be increased at the same time the crank B is nearly horizontal, which gives the safety-valve the advantage over the spring balance, and *vice versa*. In this way the lever is allowed to rise, without increasing the power thereby.

Claim.—The mechanical means herein described for the purpose set forth, or any equivalent arrangement.

No. 14,611.—WILLIAM M. HENDERSON.—*Improved Arrangement of Slide-Valves and Means for Operating them.*—Patented April 8, 1856.

The cylinder has five ports: E is the exhaust port, *e e* are the education ports, and *i i* the induction ports. The valve *s* operates on the

induction ports, and receives its motion from the graduated adjustable cut-off box B, the different degrees of cut-off being graduated across the box in an oblique direction, and adjustable by sliding on the parallel key on the shaft A. The rise for opening the valve being parallel with the shaft, the steam ports will always open at the same part of the stroke. When the oblique fall passes the nose P, the spring J closes the port. The valve is prevented from going back too far by the part T of the box catching the opposite nose P¹ on which it slides until the rise comes in contact with it, which opens the other port D¹ in like manner, the closing of which is effected by the spring K. The valve E is made variable by the adjusting box C¹, which is similar in construction to B.

Claim.—The arrangement of the valves and the means for operating them, by which the entire exhaust is controlled by a non-pressure valve, enclosed and working within the balanced cut-off induction slide valve, and worked by separate mechanism in the same plane, the time of cut-off and exhaust being variable at pleasure, and in no way connected or affected by the movements or operations of each other.

No. 14,991.—JOHN F. ALLEN, assignor to NOAH L. COLE.—*Improvement in Operating Slide-Valves for Steam Engines.*—Patented May 27, 1856.

The wiper I is attached to the valve-stem D in such a position that, as the valve is moved, the said wiper at every stroke of the valve wipes against the end of the rocker G, and by that means through the action of the rocker on the stud h moves the seat E along with the valve, and then passes the said rocker, and allows the seat to be returned by the action of the springs to the central position shown in full lines. The effect of this motion of the seat E is to keep up a wide communication between the exhaust cavity m and the port a or a¹ through the port a* or a*¹, and thus provide for a free exhaust.

Claim.—The movable valve-seat E, arranged and operating between the valve and the usual stationary valve-seat.

No. 14,010 —JAMES COCHRAN.—*Improved Method of Operating and Lubricating Slide-Valves.*—Patented January 1, 1856.

The nature of this invention consists in making an aperture or opening in the valve-seat for the purpose of introducing a pin or lever from or into the movable valve, which opening is surrounded with tight sliding surfaces, and thus avoid the troublesome stuffing-box used heretofore.

To lubricate the valves or rubbing-surfaces, the slide-seat is provided with another aperture that leads from any convenient part of the slide-seat to the face of the valve in such a part as does not uncover by its motion; and the valve and seat are also punctured in such parts as do not uncover, which cavities receive and retain the lubricating medium. A represents the valve-seat; B the opening in the valve through which

the lever is introduced, forming the valve V; C the inlet to the chest; D, is the outlet; O and F cavities for the reception of oil.

Claim.—1st. Moving a vibratory flat or curved slide-valve within its chest, without the necessity of a stuffing-box, by the means or similar ones to those described.

2d. I claim, substantially, the method of lubricating slide-valves, as described, by and through an aperture of the valve or its seat.

No. 14,999.—WILLIAM BURDON.—*Improvement in Relieving Slide-Valves from the Pressure of Steam*—Patented June 3, 1856.

By this improvement the steam is prevented from acting upon the back of the valve, except on the narrow margin *a a*, which is sufficient to receive the requisite pressure for keeping the valve tight.

Claim.—The employment of a hollow cylinder E, with a closed head *b*, supported upon wheels F F, to run back and forth on the valve-seat B, or on ways parallel thereto, and receiving a piston C, attached rigidly to the valve, and thereby being caused to travel with the valve, and relieve it of all pressure of steam beyond what is necessary to confine the valves to its seat.

No. 14,125.—CHARLES H. BROWN & CHARLES BURLEIGH, assignors to THE PUTNAM MACHINE CO.—*Improvement in Means for Regulating and Working Steam-Valves as Cut-Offs*.—Patented January 15, 1856.

In proportion as the balls of the governor diverge, the rod V is raised, and the end of the lever *d* is withdrawn from the slot in the bottom of the stem *g* of valve A¹, thus carrying the shoulder *f* further from the circle of revolution of cam *h*. When the balls are at their highest point the shoulder *f* is withdrawn, (see fig. 2,) so that the cam revolves without touching the lever, and the valve is not opened.

Claim.—Operating the valves by means of the revolving cams *h*, in combination with the bent levers *d* and their combination with the governor, in the manner and for the purpose substantially herein set forth.

No. 14,145.—JAMES P. ROSS.—*Improvement in Means for Operating the Steam-Valves in Blower Engines*.—Patented January 22, 1856.

The piston moving in the direction of the arrow in fig. 1, the head piece *i*, by pressure on the under edge of cam *t*, lifts the right-hand end of yoke *y*, and through rod *r* lets on the full head of steam; when *i* leaves the cam *t*, and after passing up cams *t*¹ and *t*², it presses against rim *w* and slightly lifts the left-hand end of the yoke and causes rod *r* to cut off the steam, the weight *c*² acting with it to depress the opposite end of the yoke.

The rods r^1 r^2 slide in holes in the ends of the yoke, and have weights c^1 c^2 attached to their lower ends; the rods and weights are connected with levers d^2 d^2 and d^1 d^1 , which carry also weights f^1 f^2 of the same size as weights c^1 c^2 ; the difference in the length of lever arms, however, serves to overcome the friction, and causes the weights f^1 f^2 to lift c^1 c^2 and to elevate the rods r^1 r^2 as their respective ends of the yoke rise, so that the nut i^2 will just come in contact with the end of the yoke at the termination of its upward motion. The higher up the nuts i^2 will be screwed, the greater will be the length of rods r^1 r^2 slipping through the yoke before the nut reaches it, and, consequently, the yoke will receive the less motion as the weight drops to its seat. By this means a greater or less opening of the valve will be produced.

Claim.—The cam yoke y , in combination with the adjustable weights and counterpoise levers, or the mechanical equivalents of these several parts, constructed, arranged, and operating substantially as and for the purposes specified.

No. 14,108.—JAMES McNAB and ADAM CARR.—*Improvement in Steam Stop-Valves.*—Patented January 15, 1856.

The outer shell B B is secured to the spindle A by means of the screw c and the screw-thread D at the bottom of the spindle.

Claim.—The attachment of the outer shell B B to the valve-spindle A A in such a way that it can be removed at pleasure to repair the valve.

No. 14,906.—RICHARD COLBURN and L. W. HANSON.—*Improved Arrangement of Supplemental Valves for High-Pressure Steam Engines.*—Patented May 20, 1856.

When steam is admitted through port C, the valve K is closed, and K^1 opens; a way is thus opened through h^1 for the exhaust steam, which will remain open until the steam is admitted at the opposite port C', when the valve K^1 is closed and K opened, and the steam from the other side of the piston passes off through the opening h .

Claim.—The self-acting valves K K^1 , connected together for the purpose of freeing the cylinder of water and of back steam.

No. 14,150.—ALBERT BISBEE.—*Improvement in Means for Operating the Throttle-Valve of Steam Engines.*—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—Raising and lowering the vibrating toe a by means of the lever f , operated by the governor, in the manner substantially as herein set forth.

VII.—NAVIGATION.

No 14,903.—JAMES BEETLE.—*Improved Boat-Framer*.—Patented May 20, 1856.

In using the machine, its keel rests *m m* are fastened to the keel timber, and so that the plane of the machine shall stand transversely and at right angles to the said keel timber. The rib timbers are next introduced between the parts *m m*, and fastened on the keel; they are then to be bent around against the outer edges of the bars *c d e f* and between the clamp-bars *a a* or *b b*, the screws thereof being set up so as to cause the rib timbers to be held in place, or such timbers may be tied or secured to projections *t t* extending upward from the bars *n o*.

Claim.—The boat-framer, as composed of the sets of adjustable and extension bars *a a*, *b b*, *c d*, *e f*, and connecting contrivances, viz: the keel rests *m m*, bars *n o*, and their screws.

No. 14,565.—GEORGE W. LA BAW.—*Improved Life-Boat*.—Patented April 1, 1856.

Figure 3 represents the inner boat; *J J* are pivots on which the inner boat is suspended; *B B* are the ends of the outer boat, which contain the air chambers *I I* (see figure 5); *C C* are the seats; figure 4 represents an end view of the inner boat; *F* are ports for ventilation; *G* is the cabin door. The sides of the boat are constructed so that the top and bottom are the same as shown in figure 1.

Claim.—Arranging the carriage or inner boat upon pivots, so as to allow the outer boat to rotate over and around the inside boat or carriage, which always retains an upright position, when constructed and operated as described.

No. 15,794.—RUFUS RODE, assignor to JOHN DENIG.—*Improvement in Boat Oars*.—Patented September 23, 1856.

By operating the handle *B* attached to the lever 3, the connecting plate 4 will cause the oar *A* attached to the corresponding arm 3 to be moved in an opposite direction. By this arrangement the oarsman can row the boat, having his face fronting the bow. The oscillating plate 2 swings freely on a pivot *a*, supported by a rower box 1, which is attached to the side of the boat.

Claim.—The combination of the oscillating plate and double-jointed arms, forming a double-jointed boat oar, operating on an oar or rower-box as described, or in any manner substantially the same, for the purpose of enabling the oarsman to row forward with his face fronting the bow of the boat.

No. 14,489.—CHARLES H. KEY, administrator of the estate of SIMON F. BLUNT, deceased.—*Improvement in Detaching Boats from their Tackle*.—Patented March 25, 1856.

The iron piece A is fastened to the boat through the eye at E. The block of the tackle is attached to a piece of iron F. C slides on A, and connects A and F as long as there is any weight acting on A. When the weight is removed, the slider falls, the wedges at B separate, and the boat is freed.

Figure 3 represents an iron bolt, which, when combined with iron jaws, would answer the same purpose.

Claim.—The use of the weight of the boat when out of the water to keep in place the contrivance for sustaining it, so that it shall no longer be sustained when the boat takes the water and the weight is transferred to the latter; and for this purpose I claim, as the invention of the said Simon F. Blunt, deceased, the contrivances herein described, and any others analogous thereto, whereby the same object is accomplished in a way substantially the same.

No. 15,187.—DANIEL LARGE.—*Improved Arrangement of Means attached to Ice-Boats*.—Patented June 24, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—The arranging in the after part of the boat of the two troughs, for throwing, by the power and impulse given by the paddle-wheels, the broken and floating ice upon the fast ice on each side of the channel, and thereby keeping the water clear for the passage of vessels.

No. 15,472.—HENRY BROWN and WILLIAM BROWN.—*Improvement in Ice Breaking Boats*.—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The formation of a recess in the bows of a steamboat, said recess having inclined shelves E and E¹, angular terminations F and F¹, and angular rib G, in combination with the guards H and H¹, the whole being arranged and constructed substantially in the manner set forth, for the purpose of breaking a channel through ice, and directing the broken pieces under the ice remaining on each side of the channel.

No. 14,843.—GEORGE W. LA BAW, assignor to Himself, JOSEPH COLTON, and THEODORE HOWELL.—*Improvement in Propellers for Lif-Boats*.—Patented May 6, 1856.

The boat is constructed, as shown in the side elevation, (fig. 1), so that the top and bottom may be alike. At the central point in the stem and stern are the trunnions on which the carriage rotates, seen at E, fig. 2,

which trunnions are hollow to admit the rods G and L to slide freely through them. The propellers having blades on both ends are supported on bearings at *e*; by working the levers J J, a reciprocating motion is given to the paddles F F F.

Claim.—Constructing the propellers with blades on both sides, so as to enable the boat to be worked by the same mechanism when either side up, substantially as described.

No. 15,487.—WILLIAM A. LORDON.—*Improvement in Means for Guiding Line Ferry-Boats, or Flying Bridges.*—Patented August 5, 1856.

The cable X X is passed between the rollers *d* and *d*¹ on the ends of the vibratory beam D, and having been properly tightened, it forms a line from shore to shore. To cross the stream the boat is pushed from the bank, and at the same time the vibratory lever D is brought to the requisite angle with the side of the boat by means of the windlass E, her forward end being pointed up stream, and the force of the current operating against the sides of the boat will cause its propulsion.

The inventor says: I am aware that James Parks proposed the employment of a grooved wheel or pulley-block, with a rope attaching it to a boat guided by an ordinary steering oar, when said wheel was used as a traveller or a tight cable, stretched overhead from bank to bank, as a means of crossing streams by force of the current. I therefore do not claim this as my invention.

I *claim* the vibratory lever D, constructed substantially as described and arranged and operated with a cable, in the manner and for the purposes set forth.

No. 15,473.—JOHN M. BROOKE.—*Improvement in the Means for Attaching and Detaching Boats to and from their Tackle.*—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—In the application to boats and their hoisting and lowering apparatus, a bolt B with a hollow head opening on and forming part of a curved channel or deflecting surface C, having also a curved slot to correspond with the channel; so that a ball A fitting conformably thereto will, by the force of gravity, when permitted, follow this curve and be turned aside, and moreover will be prevented from reattaching itself to the bolt if passing up and down before the aperture.

I also claim the arrangement of a cock or prop F, let into the side of the deflecting surface, so as to secure the ball in the head of the bolt when required, but offering no obstacle to its entrance.

No. 15,954.—JOHN SCHAFFER.—*Improvement in Capstans for Steam-boats.*—Patented October 21, 1856.

The nature of this invention consists in the mechanical arrangement connecting the shaft A, which is driven by the steam engine, with a

capstan B, provided with a drum C below deck by means of the shafts D E F, suitably geared to convey motion to the capstan, so that the steamboat may be rapidly shoved or otherwise handled in navigating intricate water channels without the necessity of having men with handspikes to operate the capstan, and without having the rope as thrown off from the capstan above deck piled and obstructing the deck.

Claim.—The drum C on the shaft of the capstan B, as arranged, the capstan being steam driven by geared shafting connecting it with the "little nigger," and the whole being combined and made operative through the pulley I, substantially in the manner and for the purposes described.

No. 15,845.—WILLIAM M. ELLIS.—*Improvement in Buoys.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The method described of moving buoys, beacons, and floating bodies, by having their cables attached to said bodies in the line of their calculated centre of tidal pressure.

2d. The method of connecting the forked or V link or shackle to the said buoy or floating body by means of a trunnion-bolt passing through a metallic tube or pipe properly set and secured within the said body.

No. 15,200.—JOHN TAGGART.—*Tidal Alarm-Buoy.*—Patented June 24, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The combination and arrangement of the air-tank D, the stream or current-wheel C, the bell G¹, and mechanism i k l, for causing said bell to be sounded during the rotary movements of the wheel, produced by the action of a current in the water.

I also claim arranging or combining with the stream-wheel the bell, the striking apparatus and air-tank, the enclosing or guard frame A, and the pendulum or weighted lever B applied thereto, the same operating together in the manner as shown.

No. 14,758.—ENOCH APPLGATE.—*Improvement in Chain-Cable Hooks.*—Patented April 29, 1856.

The cable chain is suspended between the projections A when the anchor is raised, they being held together by means of a lock-lever B, the mortises a a, and projections l. The apex of the angle G of the lock-lever B serves as the fulcrum upon which the lever is moved to lock the arms for the purpose of supporting a weight. The unlocking is effected by striking the end of handle c, when the weight of the anchor will cause the chain to force these arms apart, as seen at figure 2, thus allowing the anchor to drop from the cable hook.

Claim.—The hinged arms F and projections A, or their equivalents, for supporting the anchor, in combination with the lock-lever B and projections I, when operating in the manner and for the purposes as herein set forth.

No. 15,323.—ARTHUR BARBARIN and B. F. SIMMS.—*Electro-Magnetic Fog-Bell*.—Patented July 15, 1856. England, August 17, 1855.

A is an electro-magnet, B the armature which is attached to the short arm of the lever C. Upon the end of the long arm of this lever is a hammer D, which strikes the bell E when the arm C is raised. To the verge G of a common clock-work are fixed two wires H and H¹, the free ends of which (as the verge vibrates to and fro) dip alternately into mercury cups K; thus whenever the wires dip into the mercury cups, the battery connexion is established, the armatures cause the hammers to strike the bells, and while the clock runs the bells ring.

Claim.—The application of electricity and magnetism to the ringing of fog-bells.

No. 15,605.—HENRY L. DE ZENG.—*Self-Adjusting Fog-Bell*.—Patented August 26, 1856.

When the float at the extremity of the arm or lever F is actuated by the swells, the chain G will be drawn backward and forward through the arch D. This will cause the cam g to turn partially around, or revolves upon the ring d, it will make no difference in which direction the of the cam strikes the bottom of the arch, the opposite one presenting a smooth surface for the chain to slide over the two friction-rollers e and f, relieving the ends of the arch; this will compel the axle of the cam g to act upon the heel of the hammer E at the passage of each swell, the hammer being a sufficient distance from the bell to allow the catch h of the cam g to pass to the upper side of the heel n of the hammer, the ends of both being bevelled for that purpose. As the frame until the spur or tooth l passes out of each of the chains, and one end waves roll, or what may be the state of the tide, as the float will swing round and adjust itself in any position required.

Claim.—The attaching a float to a lever or arm that is connected at or near the other end to a fixed vertical shaft or axis in such a manner that said float shall be allowed to swing around said vertical shaft or axis and accommodate itself in the direction in which the swell or current or both are moving, so that said float is not subjected to any sideways concussion or strain from either the tide or swell, but is free to oscillate or vibrate with the swell, and communicate motion to any suitable bell or other alarm, substantially as specified.

2d. I claim attaching the ends of a chain, or its equivalent, on opposite sides of a lever that receives a vibrating or oscillating motion from a swell, when said chain is passed over a cam-wheel or other similar article, to communicate the motion imparted to the lever and chain to the hammer of a bell or other signal or alarm, as described.

3d. I claim the arrangement of the cam g and catch h rotatively

with the heel or the hammer and with the chain, substantially as specified, whereby the vibrating motion of the chain works the said hammer, as set forth.

No. 15,586.—GREENLEAF A. WILBUR.—*Improved Grapple for Raising Sunken Bodies.*—Patented August 19, 1856.

To use this apparatus, the staple T is attached to whatever it is wished to secure against loss by sinking in water, and the buoy B is attached to the staple. In case of fire on board of the vessel, and sinking of the object to be secured, the buoy B floats, paying out its chain C¹ from the spool. To save the sunken object, the chain C¹ is detached from the buoy, its free end is passed through the furrows *f* and *f*¹, thence through the hole *h* in G, and the grapple is now permitted to descend the buoy-chain C¹, and will eventually grasp the staple T, which will hook into the hook A, where it is kept by spring K, and the object can be raised now by hauling at the grapple-chain C.

The inventor says: I do not claim the use of a buoy or buoy-chain to indicate the position of sunken bodies.

But I *claim* the improved construction of the grapple to be operated with a buoy and staple, in the manner and for the purpose substantially as set forth.

No. 14,497.—CALVIN FLETCHER.—*Improvement in Paddle-Wheels.*—Patented March 25, 1856.

A represents the shaft of the wheel; B B are the flanges which support the outside arms *c c c*, &c., and B¹ is the middle flange which carries the inside arms *d d d*, &c.; *e f g* are the buckets. The water can freely pass through the spaces *o o*, (figure 3,) presenting but little vertical resistance to the buckets in their egress from the water.

I do not claim the curvilinear shape of the buckets, as in itself new and patentable; but I *claim* the construction of propellers with a series of narrow buckets of curvilinear or parabolic shape, combined and arranged in the manner hereinbefore set forth, or its equivalent, for the purpose of combining the greatest propelling force with the least possible resistance to the ingress and egress of the buckets in their passage through the water.

No. 15 564.—ABRAHAM HOUSEWORTH.—*Improvement in Paddle-Wheels.*—Patented August 19, 1856.

When the cam F is placed at the right side of the shaft A, and the wheel rotates as indicated by the arrow, the buckets D D¹ will be spread apart as they enter the water, one end of the forks *a*¹ being acted upon by the oblique groove *c*¹, and the oblique face or end *d*¹ of said cam acting upon the ends *b*¹ of the floats D¹. As the floats pass underneath the centre of the shaft, and rise to pass out of the water, they are closed by the cam G.

Claim.—The floats or buckets D D applied or attached to the wheel, as shown, and expanded, or spread and contracted, or closed by the cams F G, arranged as shown and described.

No. 15,967.—MATTHEW A. CROOKER.—*Arrangement of Buckets of Paddle-Wheels.*—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The method of arranging the buckets or floats of a paddle-wheel when the buckets are to be broken into sections; that is to say, by arranging each set or section of buckets along four arcs which circumscribe the periphery, and which arcs are struck with a radius greater than the semi-diameter of the wheel, each set of buckets when placed upon the shaft being arranged so that the place where the arcs of the one set meet shall stand opposite to the centre of an arc in the adjoining set, if the wheel be composed of but two sections, or when more than two sections shall be divided proportionally.

No. 14,920.—HARVEY LULL.—*Improvement in Feathering Paddle-Wheels.*—Patented May 20, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Imparting to the paddles *e* of paddle-wheels a rotating motion on axis *d*, whilst revolving about the axis *a* of the paddle-wheel, by means of an eccentric cog-wheel *g*, combined with and engaging the cogs of the pinions *f* on the shafts *d* of the paddles.

No. 15,149.—JOSEPH G. SHANDS.—*Improvements in Feathering Paddle-Wheels.*—Patented June 17, 1856.

Within each ring C is placed a steadying grooved wheel D, secured to the wheel-shaft A. Two smaller grooved wheels E E are placed in such positions as to act on the outer peripheries of said rings opposite their axes. The said grooved wheels E E rotate freely on their arbors F F, and they are allowed to have a limited lateral movement on said arbors, controlled by the off-sets *k k* and springs *j j*; which arrangement enables the grooved wheels E E to adapt themselves to all lateral oscillations of said rings, and yet enables said grooved wheels to afford ample lateral support to said rings when they are subjected to violent shocks. All shocks or concussions which have a tendency to force upwards the rings C C are transmitted directly to the wheel-shaft A by the grooved wheels D D.

Claim.—Combining the wheels D D with the shaft A, in such positions that they are enabled to transmit a portion of the strain exerted upon the rings C C directly to the said shaft, substantially as herein set forth; in connexion with the combination of the wheels D D with shaft A in such positions as to bring them within the inner peripheries of the rings C C.

I also claim making the holes in the outer ends of the arms *h h* of an oblong shape, for the purpose substantially as herein set forth.

No. 16,091.—AUGUSTUS JUAN.—*Improvement in Propeller Shafts.*—Patented November 18, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—A propeller shaft which in its construction is circular, conical, and angular, with these three conditions combined, or otherwise, and to be applied vertically, as described and shown, and for the purpose set forth.

No. 14 589.—AARON ARNOLD.—*Improvement in Enclosing Propeller Shafts in Keels.*—Patented April 8, 1856.

The hollow side-keels B B are bolted through flanges *c c* to the vessel's bottom, parallel to the keel C. They are made of a width sufficient for stiffness and to contain the propeller shafts D D. At *a a* they are made with a gradual enlargement to receive the cranks *b b*.

Claim.—The manner of enclosing the propeller shafts in keels B B, made of sheet-iron, or other material, fastened to the vessel's bottom, for the purpose and in the manner substantially as herein described.

No. 14,973.—JOHN GERARD ROSS.—*Improvement in Hand-Propellers.*—Patented May 27, 1856.

If this propeller is to be used in shallow water, the plate *e* is attached to the lower part of bucket *c* by means of studs and mortises, &c.

When used for whale fishery, or similar purposes, the lance-points *f* are attached to the bucket in place of the plate *e*, for the purpose of fastening it to the whale or similar fish, &c.

The inventor says: I do not claim a bucket moving on hinges in itself, as this is well known in propellers for steam vessels, and is generally known as the duck's-foot propeller; but I *claim* the plate *e* and lance-points *f*, in connexion with the propelling bucket *c*.

No. 14,786.—S. W. WOOD.—*Improvement in Propelling Boats.*—Patented April 29, 1856.

The shaft of the drum E, to which the paddles *k* are attached, being secured to the frame F, and entirely independent of and not connected with the boat, is raised and lowered through the operation of the hand-wheel and screw P attached to said frame.

Claim.—The arrangement and combination of the horse-power and paddle-wheels, whereby the raising and lowering of the paddle-wheels, to suit the various depths at which the boat sinks produces a variable inclination of the horse power, so as to enable the horse to exert a power proportional to the weight of the load.

No. 16,169.—HENRY M. BONNEY.—*Improvement in Sail-Hooks.*—Patented December 9, 1856.

The guard F attached to the part A prevents the stay from wearing the bolt-rope which passes through recess E; and besides this, it pre-

vents the hank from slipping round, so as to carry the bolt-rope out of the recess E.

The inventor says: I am aware that it is not new to make a metallic hank-body in two parts, connected by a hinge and screw. I do not claim such.

I *claim* an arrangement of the hinge and the guard, relatively to the eye and the clasp, or connecting contrivance; the entire guard being in one piece, and fastened to the movable part of the body, and so as to be movable with it, and to open from and shut against the other part, as specified.

No. 14,094.—HENRY DUNCAN PRESTON CUNNINGHAM.—*Improvement in Reefing Sails*.—Patented January 15, 1856.—Patented November 30, 1850, England.

The sail is kept from chafing against the lee rigging when rolled upon the yard, by the spar G, which stretches from yard-arm to yard-arm, and is secured to the yard-arm hoops. This spar also carries the top-gallant studding-sail booms.

The sail is divided down the centre, to enable it to clear the centre fittings on the yard; and this aperture in the sail is closed by a bonnet S, which is provided at intervals with metal travellers T. The upper traveller T is furnished with screw-bolts which are inserted into holes in the iron D, which latter is so made as to swing, that the bonnet shall blow out or work in harmony with the other parts of the sail.

Claim.—1st. The chafing spar G applied to the after side of the sail yard, for fending off the sail from the mast or rigging when rolled around the yard, as set forth.

2d. The radius bar D in combination with the bonnet-head, in order to permit the top of the bonnet to blow out in harmony with the belly of the sail, as described.

No. 15,754.—ISAAC BOSS.—*Improvement in Reefing Topsails*.—Patented September 23, 1856.

The lines *c* are fastened in the eyelet holes *a*, and reef from aft forward, having knots in the ends of the lines, bringing the knots close to the holes; the lines then run up between the head of the sail on a straight line and the fore part of the yard, thence to the mast-head direct, with a block at the mast-head, reefing from forward aft and thence leading on deck.

Claim.—1st. The running of lines from the reef, between the head of the topsail and the fore part of the yard, thence direct to the top mast-head.

2d. The arrangement of reef tackle beneath the yard, running from the end of the yard to the quarter on deck.

3d. The peculiar mode of strengthening the sail by bands and double ropes, as described.

No. 14,723.—GEORGE HUBBARD.—*Improvement in Suspending Extra Topsail Yrads.*—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: What I *claim* as my invention or improvement in the application of the extra yard F is, arranging the same, or its connexion with the mast A above the cap *c* of the lower mast-head, and applying said extra yard F to the topmast B, and suspending it from or near the trestle-tree *g*, whereby said yard may not only be raised up towards said trestle-tree, but be supported in the manner set forth, and be capable of being braced around as occasion may require, and this without danger of injury to the cap of the lower mast-head.

No. 15,837.—HUBBARD BIGELOW and MORTIMER M. CAMP.—*Improved Ring-Bolt 'or Ships' and Bouts' Tackle.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—We do not claim an eye or ring-bolt made in parts, that can be secured to or released from each other; but we *claim* the tongue C, the holdfast D, and the levers E E¹, as arranged in relation to the body A, in the manner and for the purposes set forth.

No. 15,624.—REUBEN SHALER.—*Improvement in Bilge and Leakage Water Indicators for Ships and other Vessels.*—Patented August 26, 1856.

To the metal chamber A is attached a pipe which extends downwards to the bottom of the hold of the vessel to which the apparatus is attached. The chamber A is covered with a system of dish-shaped India-rubber springs C, to the upper one of which is attached the shaft D of a rack. When the bilge-water rises in the pipe, it compresses the air in the same, actuates the rod D and pinion E, and moves the indicator G on dial F.

Claim.—In bilge and leakage indicators, the sectional diaphragm spring C, as arranged in relation to the chamber A and the standard D, for the purposes described.

No. 14,113.—CHARLES PERLEY.—*Improvement in Cargo-ports for Ships and other Vessels.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engraving.

h represents the cross-bar, with the lashing for the purpose of securing the shutter *g*.

Claim.—The rim 7 around the flanch 6 that receives the bolts 9 to secure the frame *f* to the vessel, said rim 7 receiving a caulking on both sides—one against the vessel, and the other against the shutter *g*—thereby effectually preventing leakage in the manner specified.

No. 14,048.—SAMUEL W. BROWN.—*Improvement in Constructing the Bottoms of Ships and other Vessels.*—Patented January 8, 1856.

The nature of this invention consists in constructing so much of the lower bottom part A of cast-iron as may be necessary to constitute both ship's bottom and ballast.

Claim.—Making the entire bottom A and keel of ships and other vessels of thick and continuous plates of metal, for the united purposes of bottom and ballast, as herein set forth.

No. 14,365.—ALEXANDRE LE MAT.—*Improvement in Means for Increasing the Buoyancy of Ships and other Vessels.*—Patented March 4, 1856.

The nature of this improvement consists in inserting into and attaching to the sides of a vessel slotted tubes $s s s^1$, into which are placed knobs at the rear ends of bags $a a^1 a^2 a^3 a^4 a^5$. These bags can be drawn to their proper positions along the tubes by means of a windlass and ropes attached to the knobs. The bags when inflated, as represented at $a^3 a^4 a^5$, will add to the buoyancy of the vessel. The sectional figure 2 is drawn on an enlarged scale.

Claim.—The horizontal and upright tubular rails or tubes, constructed, furnished, and operated, substantially as described and for the purposes essentially as specified.

No. 15,090.—WILLIAM MONT. STORM.—*Improvement in Safes for Ships and other Vessels.*—Patented June 10, 1856.

The bottom b of the fire-proof receptacle B is detached from the main body, so as to permit the water to flow in at c , in order to float out the buoy C as the vessel sinks. C is formed of two separate thicknesses of metal, the space between these two being filled with India-rubber. The tube Z is open at top and bottom; the float Z^1 carries a flag-staff and pennant, which will be hoisted by the rise of Z^1 when the safe is afloat. The safe C is made to serve also the purpose of a lie-preserver by means of the bails $f f$, &c.

Claim.—The combination of the receptacle or "sheath" B, open at the bottom, and at its top open to the upper deck A, with the (independently water-tight) double-shelled buoy C, having within it the (again independently water-tight) "deposit chamber" D for valuables, said chamber being accessible from the exterior by a water-tight door E, closing and clamping for that purpose on an elastic seating, &c., substantially as described.

2d. The buoy, the tube Z, flag, and float Z^1 , for the purpose explained.

No. 15,886.—JAMES KELLEY.—*Improvement in Anti-Friction Bushing for Ships' Blocks.*—Patented October 14, 1856.

The rollers D can revolve freely in their bearings in the rings E, and said rings can rotate freely in corresponding grooves d in the heads C

D. The head C is riveted to the flanges A of the head B, and thus sand and water are excluded from the apparatus.

Claim.—The described mode of constructing the bush, by riveting the head within the cylinder, and the annular grooves *d d* for the reception of the bearing rings E E of the rollers, for the purposes specified.

No. 15,817.—JOHN M. RILEY.—*Improvement in Means for Lubricating the Sheave-Pin of Ships' Blocks.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The bands E F, one or more interposed between the axis B and the eye or band B of the pulley C, the bands E F being perforated as shown, and the axis B provided with passages or apertures *f g*, for the purpose of lubricating the bands and axle, substantially as described for the purpose specified.

No. 14,377.—DANIEL TALLCOT and GEORGE TALLCOT.—*Improvement in Ships' Capstans.*—Patented March 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of the ratchet I fastened to the gear J, with the ratchet R on the barrel F, and the traversing pawls P P in the head H, for the purpose of locking the head to and releasing it from each of the ratchets I and R, substantially as described.

No. 14,983.—SAMUEL GATY.—*Improvement in Ships' Capstans.*—Patented May 27, 1856.

In consequence of the action of the pawls *ff* and *f' f'*, when head H is turned from left to right, the body C will be turned also, the shaft E remaining stationary. But if the head is turned in the opposite direction, the action of the pawls will be reversed, thereby allowing the shaft E and rim M to be turned, and the pawls *d* will catch between the ratchet-teeth on the outer periphery of the rim M, which will consequently turn the body C in the same direction.

Claim.—The arrangement of the ratchets and pawls, and spur-wheels and pinions in capstans or windlasses; so that simply reversing the prime mover, will change it from a simple to a compound capstan, without shifting any of the parts by hand; and so that, also, the spur-wheels and pinions may only rotate when used as a compound capstan, and be self-ungearing when changed to a simple one.

No. 14,986.—DANIEL TALLCOT and GEORGE TALLCOT.—*Improvement in Ships' Capstans.*—Patented May 27, 1856.

The vertical ratchet-wheel I (arranged to turn within the ratchet R) is fastened to the gear J, both turning loose on the spindle E, so that when the pin Q is pushed into the position represented by dotted lines,

the pawl P will catch into the ratchet I, and release ratchet R, so that by turning the top H it will carry the gear J which turns the gear K and shaft L. This shaft L turns in boxes M N on the arms G G, and carries the gear O, arranged to work into the stationary internal annular gear B, so as to turn the barrel F with great power.

Claim.—The gears J and K, arranged at the top of the capstan, in combination with the shaft L and gears O and B, arranged at the bottom of the capstan, for communicating a slow and powerful motion to the barrel F, substantially as described.

No. 15,933.—CHARLES PERLEY.—*Improvement in Ships' Capstans.*—Patented October 21, 1856.

By reference to the claim and engravings, it will be seen that, by turning the barrel *a* into certain positions, the pinion *m* may be removed from shaft 2. The apparatus may then be worked without said pinion, or the pinion *m* may be attached to shaft 8, and thus the number of revolutions of the barrel *b* can be regulated according to circumstances.

The inventor says: I do not claim a capstan with the barrel filled to rotate with, or be independent of, the handspike head, as this has been done; neither do I claim varying the power of the capstan by means of gearing in itself, as worm-pinions, gears, and a variety of means have been heretofore in use; but I am not aware that a wheel around the base of the capstan has ever before been actuated by a movable pinion, receiving its motion from the handspike head, centre-shaft, and gearing in the base; thereby the power to revolve the capstan is applied to the best advantage, and with the largest possible leverage against the rope or chain around the barrel of the capstan.

But I *claim*, 1st, retaining said pinion *m* in place, by the overhanging base of the capstan barrel, except at the notches *q*, at which point said pinion *m* can be removed, as specified.

2d. Constructing the oil receptacle and groove 6 (that contains the sustaining balls) higher at the outside than the inside, to cause said balls, in their motion, to lubricate the journal 5, substantially as specified.

No. 15,123.—JAMES EMERSON.—*Improvement in Ships' Capstans and Windlasses.*—Patented June 17, 1856.

If the key *b* is elevated, the wheel or windlass H will be connected and will turn with the shaft D and capstan G. The capstan G is connected with the windlass or wheel H when the cable is drawn up, and the strap J is loosened by turning the shaft L. This capstan combines thus the advantages of a double capstan for joint or separate and controllable operation.

The inventor says: I claim nothing new, irrespective of the arrangement and operation together, substantially as specified, of the parts of the capstan made to couple and uncouple at pleasure for joint or separate action, as required; nor do I claim the application of a friction-strap or belt to a windlass barrel.

But I *claim* the double or divided capstan G or windlass, arranged for operation in the manner specified, and consisting of an upper hand operative portion of the body or capstan proper G, and under loose portion of said body H, separately controllable by friction-strap J or gearing, at pleasure, with the upper operative portion G of the body of the capstan, as and for the purposes herein set forth.

No. 16,059.—RUDOLPH KNECHT.—*Improved Method of Ventilating Ships, &c.*—Patented November 11, 1856.

By the revolution of the shaft C, the wings G will draw in the fresh air through the pipe E, cooling the same, while through the perforated plate N, if the same is covered with ice, the fresh air partly purifies the unhealthy air in the room, and expels the same, with the assistance of the wings F above the top of pipe D, through said pipe.

The inventor says: I do not claim wings to draw in fresh air or to expel the foul air out of a room; nor do I claim the ventilating tubes.

I *claim* the combination and arrangement of two sets of wings on one shaft, acting simultaneously, so that while one is expelling the foul air, the other will draw in fresh air, in the manner substantially as described and for the purpose specified.

No. 15,395.—J. STEVER.—*Improved Arrangement of Means in Pendulum Pumps for Ships.*—Patented July 22, 1856.

The frame B turning on the hollow shaft A will move corresponding to the movement or inclination of the ship, and the sector I will be moved by the swing of the weight K on the bars J, and the sectors H, levers G, rods F, and plungers E will be operated, raising the bilge-water through the lower end of the shaft A, and forcing it through pipe L into the upper part of shaft A and through the pipe c. These pumps will be operated, whether the ship is rolling from side to side or pitching fore and aft.

Claim.—Attaching a series of pumps C to a hollow shaft A, which is allowed to turn freely in its bearing, and connecting the weighted bars J J to the plunger rods F of the pumps by means of the geared sectors H I and levers G, substantially as shown, for the purpose specified.

No. 15,704.—CHRISTOPHER N. NIXON.—*Improvement in Hanging Ships' Rudders.*—Patented September 9, 1856.—England, May 12, 1854.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The use or construction, as applied to sailing vessels, for steering purposes, of the groove or socket, as described, whether the same be formed to extend from the top or near the top to or near to the bottom of the stern-post; whether the same be continuous or divided into sections or parts.

2d. I claim the rod, continuous or in sections, attached to the rudder, and combined with the groove, or other equivalent, attached to the stern post.

No. 15,732.—JOSEPH S. FOSTER.—*Improvement in Reefing Ships' Sails upon Extra Yards.*—Patented September 16, 1856.

On lowering the topsail yard C and sail L, a tension and drawing is caused on the reefing lines *n*, operating through the pulleys O, which, drawing on the circumference of the arms *d* of the folding yard H, causes this yard to revolve, and consequently folds up the sail, as may be required, in two directions towards, the top and lower yards C and D.

Claim.—The double yard H H H, or extra yard of two pieces, placed about midway between the upper and lower yards, the sail passing between the two pieces, operating in the manner and for the purpose set forth.

No. 16,045.—THOMAS CARR.—*Improvement in Steering Apparatus for Ships.*—Patented November 11, 1856.

The ropes wound around the tiller-shaft F pass around the pulley E, to which the rudder-shaft L is connected by means of rod K.

The inventor says: I do not confine myself to the details, as I have shown that they may be variously modified and yet retain the peculiar characteristics of my invention. I *claim* the application to the ordinary steering apparatus of vessels of a crank, or its mechanical equivalent the eccentric, working in combination with an entire pulley or its segment, a quadrant on a vertical axis, the whole being interposed as a medium of communication between the wheel-ropes or chains and the tiller.

No. 26,165.—DAVID W. SMITH.—*Improvement in Steering Apparatus for Ships.*—Patented December 2, 1856.

This apparatus is an improvement on the steering apparatus of D. Crowell, patented December 5, 1854. In this apparatus the main pinion H on wheel-shaft E does not engage directly with the main rack I, but plays into the guard-rack M, and also into the pinion L, which engages with the main-rack I on the rudder-shaft K.

Claim.—I *claim* the arrangement of the guard-rack and the pinion on the tiller with the main rack and the pinion of the hand-wheel shaft, the whole being substantially in the manner and for the purposes as specified.

No. 16,238.—PETER H. JACKSON.—*Improvement in Ships' Windlasses.*—Patented December 16, 1856.

This invention refers to the peculiar construction of pawls 2 attached to each of the heavers *k*, which operate the ratchets *i* of a windlass; these pawls 2 are attached to shaft 3, and can be turned by means of cranks 4 to either of the two positions represented in figs. 2 and 3, and are retained in such positions by means of counterweights 5. By turning these pawls to one or the other side, the motion of the windlass can be reversed.

Claim.—The double-acting pawl 2, crank arm 4, and counterweight 5, applied to the heaver or heavers of the windlass, arranged and operated substantially as and for the purposes specified.

No. 16,000.—CHRISTOPHER AMAZEEN.—*Machinery for Operating Pawl-Cases of a Ships' Windlass*.—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—I am aware that it is not new to operate the pawl-cases by a single brake-lever, and that a lever working on a vibratory post is not new, as the same has been applied to a pump; therefore I do not claim such.

Nor do I lay claim to a single brake-lever, and two levers or series of levers applied to a windlass, so as to turn it by a single gear affixed on it, as is shown in the specifications and drawings of Nialance & Pelatiah Osgood's rejected applications for patents.

But I *claim* the arrangement of the brake-levers H H, connection lever G, vibratory posts I I, and two pawl-cases B C, as applied to a post and windlass barrel, substantially as specified.

No. 15,085.—RUFUS PORTER.—*Mode of Sounding Whistles for Fog-Signals*.—Patented June 10, 1856.

The cylinders A are provided with interior clapper-valves E near the heads thereof, which admit the air when the water recedes, but prevent its escape when the water rises, thereby producing shrill sounds as often as the cylinders are plunged into the water.

Claim.—The combination of vertical cylinders A, (or their equivalents,) and whistles attached thereto, for the purpose of having loud sounds produced by the undulations of waves or swells, substantially as herein described.

No. 15,510 —JOHN W. DRUMMOND.—*Improvement in Steering Apparatus*.—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and illustrations.

The inventor says: I do not claim a sector attached to the rudder head, acted on by a pinion, as this has before been done.

But I am not aware that a two wristed or leaved pinion, actuated by the steering wheel, has ever before been so applied in connexion with the aforesaid sector that the two wrists or leaves of the pinion can be placed on the plane of motion of the sector, and thereby avoid all tendency to turn the steering wheel by any surge or wave against the rudder; and also in connexion with said two leaved or wristed pinion I make use of a spring, or its equivalent, to hold the wrists of said pinion on the desired plane.

I *claim* arranging a pinion having two leaves or wrists in such a manner relatively with the sector or wheel acting on the rudder, that the said wrists or leaves can be turned into the plane of motion of said sector or wheel to prevent motion to the steering wheel by any surge or wave against the rudder, as specified.

And in combination with the aforesaid two-wristed or leaved pinion, I claim the T-headed rod and spring K, or their equivalents, to tend always to bring the said two wrists or leaves into the plane of motion of the sector or wheel, substantially as specified.

No. 14,104.—WILLIAM R. LAVENDER and ATKINS SMITH.—*Improved Steering-Wheel Stopper*.—Patented January 15, 1856.

The lips *c* relieve the hinge D of all lateral strain. The dotted lines marked C¹ represent the stopper when turned back out of the way of the handles *b*, so as to leave the wheel free to be operated.

Claim.—Constructing a wheel stopper C, and applying it so as to operate with the wheel A and tiller B, substantially as specified, viz: so that it may turn up and down on a hinge D, and when down embrace the wheel handle *b*, and be supported laterally under the strain of the wheel by devices essentially as above described.

No. 15,898.—LODNER D. PHILLIPS.—*Improvements in Submarine Exploring Armors*.—Patented October 14, 1856.

The operation of this apparatus is such that a person placing his feet in the lower extremities *f f* of the machine, and attaching the leathern girdle firmly about his loins, the air chamber *e* being filled with condensed air, and the cap *d* firmly bolted to the head *c*, the apparatus may be let down to any required depth in the water. The air in the cavity A becoming vitiated, the operator turns the cock *m*, and receives a fresh supply from the air pressed in the reservoir B; by opening the valve *l*, the vitiated air escapes through the tube *k*. If the operator wishes to ascend without assistance, he turns the cock *o*, and admits the compressed air into the bag or submarine balloon *r*, which gives additional buoyancy to the apparatus; then, if wishing to descend again, he closes the cock *o*, opens the cock *p* in the branch pipe, and the pressure of the water collapses the balloon *r*.

Claim.—1st. A submarine armor with which the explorer can be wholly invested, composed entirely of metal, having free and easily moving jointed limbs, and from within which the explorer may give motion to the armor, and operate the external means, as set forth.

2d. Connecting with such armor a collapsible exterior vessel, so united with the interior air-chamber as to allow of its being inflated, and buoy up the armor, as described.

3d. Arranging the rods for operating the external tongs or nippers within the tubular arms, as set forth.

No. 15,125.—J. B. FAYETTE and D. WHEELER.—*Improvement in Strapping Tackle-Blocks*.—Patented June 17, 1856.

These improved straps for tackle-blocks can be applied to the blocks cold, and removed from and applied to other blocks with facility.

Claim.—For tackle-blocks a strap made in two parts A and B, each part having a hook at one end to hook into the eye of the block-hook, and a hole near the other end for the bolt that fastens them together.

No. 16,084.—GEORGE S. BURROWS.—*Improvement in Attaching Centre-Boards to Vessels*.—Patented November 18, 1856.

The centre-board C may be raised or lowered in the usual manner

by a chain attached to the end F. When it becomes necessary to remove the centre-board C from the trunk A, the bolt *b* is unscrewed and taken out, and the part D with the centre-board attached may be lifted out of the trunk by any suitable hoisting apparatus.

Claim.—The hanging of the centre-board to a movable post D, or other sliding piece of similar character, which admits of its being easily and readily removed from the trunk for repairs, or any other purpose, as described.

No. 15,420.—GEORGE W. GERAU.—*Improvement in Fore-and-aft Rig of Vessels.*—Patented July 29, 1856.

The nature of this invention consists in having the mainsail A of triangular form, attached to the boom B, as usual, and having a single block or halyard C attached to the upper end of the sail for the purpose of raising it—the lower end of the topsail D being attached to the outer end of the boom B, the upper part being attached to the topmast. By this arrangement the gaff and one set of halyards are dispensed with.

Claim.—Constructing the mainsail A, as shown, and having the lower end of the topsail D attached to the outer end of the boom B, substantially as shown and described.

No. 16,090.—AUGUSTE JOUAN.—*Lee-Boards for Vessels.*—Patented November 18, 1856.

This invention consists in attaching elastic metal plates F, by means of stanchions B, to the sides of vessels, to aid in propelling and steadying the same in heavy swells of the sea.

Claim.—The elastic metal blade lee-boards, which I call “ship-fins,” to the sides of ships, vessels, and boats, in a position nearly vertical, as described and shown, for the purpose set forth.

No. 15,298.—JAMES MINIFIE.—*Improved Arrangement of Means for Balancing and Propelling Life and Property Saving Vessels.*—Patented July 8, 1856.

The boat is composed of seven air-tight compartments strongly secured together. Attached to said boat in a substantial manner are the steel rods R and T for supporting the driving wheel M of the apparatus. Motion is imparted to the driving wheel by means of the connecting rods N, the latter being provided at their upper end with cranks and shoes for the operator to stand in and receive, in this manner, a reciprocating vertical motion. The rotary motion of the driving wheel M is converted into a reciprocating motion by means of connecting rod P, and said motion is transferred to the piston-rod N and piston K, by which means the boat is propelled.

Claim.—The arrangement of the driving wheels M, the steel foundation pieces R, and the rods and bars connected therewith and with the propellers, as they are described, in relation to the vessel.

No. 14,487.—LAMBERT ALEXANDER.—*Improvement in Propelling Vessels*.—Patented March 25, 1856.

B B are slides or guide-rods; E E are piston-rods to which the motive power is communicated; fig. 3 represents the bucket F in an upright position, and fig. 4 in a horizontal position. G G are guide-blocks.

When the rollers I I come in contact with the inclines H, the bucket is brought into a vertical position; at the same time the spring-blocks K K, becoming free, will project over the slides B, and keep the buckets moving in this position until the inclines L force the blocks K K back again, allowing the bucket again to be turned horizontally by passing beneath the rollers M on the adjustable levers N N¹.

I do not limit myself to the use of my propeller in any particular part of the vessel, nor to the size or shape of the buckets themselves, nor to any particular character of motive power; but what I *claim* is, regulating the motion of the propelling buckets by the combined action of the spring-blocks K, inclines L, rollers I I and M, and inclines H H, substantially as specified.

No. 14,226.—WALDO P. CRAIG and WILLIAM R. RIGHTOR.—*Improvement in Signals for Vessels*.—Patented February 12, 1856.

The object of this improvement is to make it manifest if one vessel is steering directly towards another; in this case, the three signal lights *a b c* on one of the vessels will appear to an observer on the other vessel in a vertical line, one above the other; whereas if the vessel steers in any other direction, the three lights will appear in an oblique line.

Claim.—A range of lights placed in the forward part and in the longitudinal centre of a vessel, the foremost being the lowest, and the following ones rising in succession above it, so as so present to an observer in or near the line of its course a range of light which is either vertical, or is directed obliquely to starboard or larboard, according to the course of the vessel.

No. 15,319.—JOHN GUEST.—*Improvement in Sounding-Guards for Vessels*.—Patented July 8, 1856.

The rod A is marked in feet so as to show on the spar deck the number of feet of water under the bottom, when the ends of the rods or radius bars B come in contact with the ground. The bars B B attached at E to the rod A slide with their other ends in a groove C by means of rollers R; they serve as fenders to prevent the rod A from breaking or bending, and to shut it up as the water shoals. A bell is attached to the pin of the shackle L, so that an alarm is given the instant the rod A rises above the mark at which it was set.

Claim.—The mechanical construction of the machine hereinbefore described, and especially the attachments of the radius bars B B, working in the grooves C C, by which I am enabled to indicate the approach of shoal water, whether the vessel be going ahead or astern.

No. 15,850.—AUGUSTE JOUAN.—*Arrangement of Elastic Plate Paddles for Steam Vessels*.—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The series of vertically divided elastic plate paddles, arranged as set forth.

No. 14,035.—IRA F. THOMPSON.—*Improvement in Velocimeters for Vessels*.—Patented January 1, 1856.

a represents the bottom of the vessel; *b* is a drag or paddle swinging on the centre 1; it is provided with a bucket or piston 2 on the top edge, which plays in a circular motion in the box *c* in such a manner that the piston does not fit water-tight to the inside of box *c*. The joint 3 connects the link *d* and arm *e* to the drag *b*; the arm *e* passes below a roller 4, and the link *d* is kept vertical as it is moved by the drag *b*. The friction-roller 5 operates upon the lever *f* of the fulcrum 6, and the lever *f* operates upon a vertical rod *g*, which, by means of a cord or chain 7 attached to it and wound around the spindle of the dial *h*, moves the hand 8, which indicates the speed by means of the figures on said dial.

Claim.—I do not claim the water-leaking pistons in themselves, as these have before been used for checking and stopping vibrations in other indicating instruments; but what I *claim*, and desire to secure by letters patent, is:

1st. The combination of a water-leaking piston or pistons with the drag *C*, in the manner substantially as specified, whereby the drag, being hinged at or near the bottom of the vessel, indicates by its inclination the speed of the vessel, and said water-leaking piston or pistons act to prevent a sudden motion to said drag as the vessel pitches, as specified.

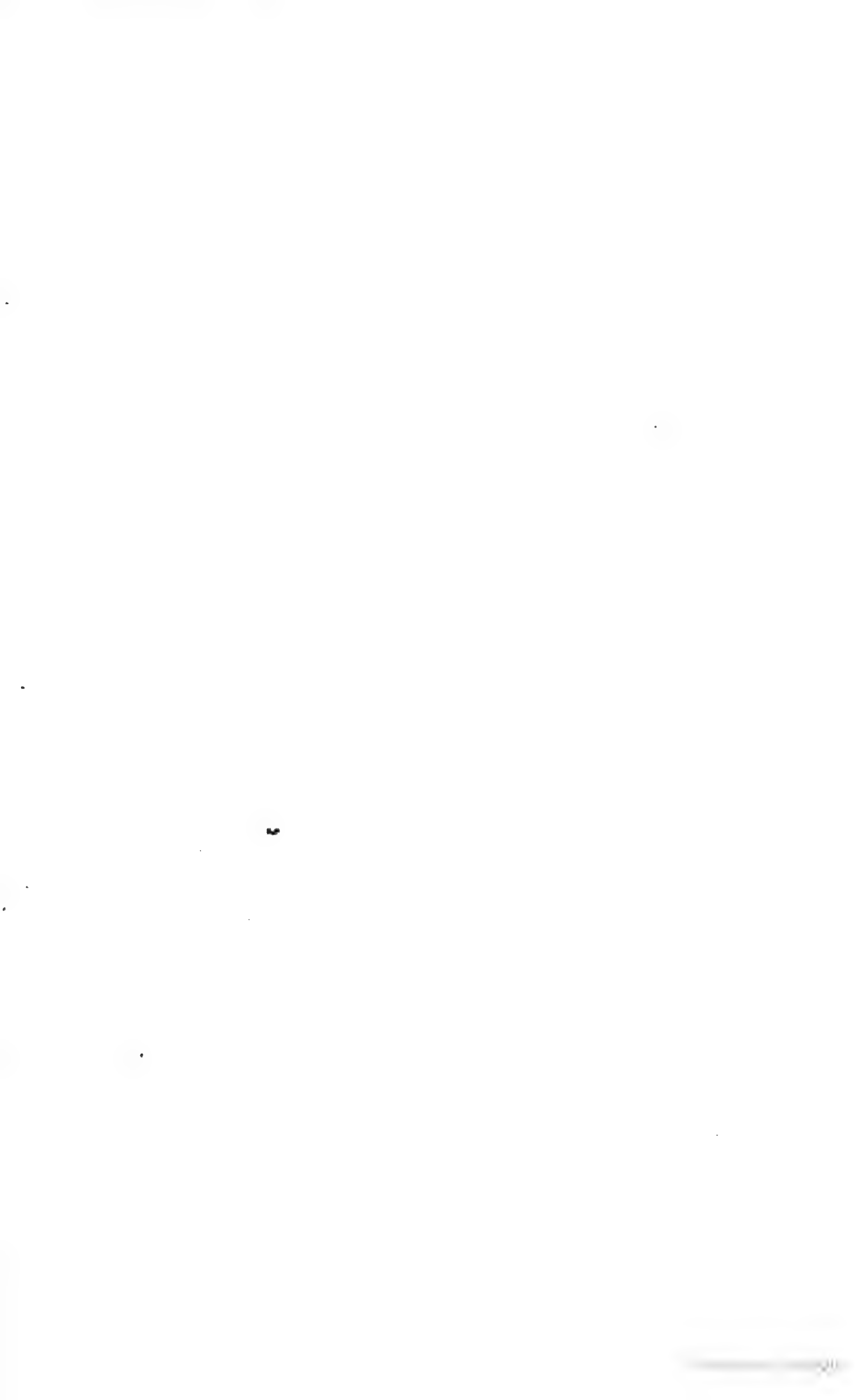
2d. I claim the method herein described of communicating motion from the drag or paddle *z* to an indicator by means of the link *d*, guided and retained vertically by the arm *e*, substantially as specified.

No. 14,328.—IRA F. THOMPSON.—*Improvement in Velocimeters for Vessels*.—Patented February 26, 1856.

As the vessel heels over and inclines the velocimeter drag and rod sideways, the pendulum hanging vertical will depress the slide *l* more or less according to the inclination of the vessel; and this slide acting in front of the drag *b* will shield the same from the action of the water, so that there will not be so much power exerted to incline the drag, thereby compensating for the amount of weight acting to keep the drag down.

Claim—The gate or slide *l* actuated by the vertical weighted lever or pendulum *h*, in combination with the hinged drag *b*, in the manner and for the purposes specified.





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